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SILVER ANNIVERSARY.

TWENTY-FIFTH ANNUAL MEETING

OF THE

NEW JERSEY STATE DENTAL SOCIETY,

HELD IN THE AUDITORIUM,

Asbury Park, N. J., August 1, 2, and 3,

1895.

PHILADELPHIA:
THE S. S. WHITE DENTAL MANUFACTURING COMPANY.
1896.

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1896.

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Secretary,	CHARLES A. MEEKER,	Newark.
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Wm. E. Truex, Freehold.

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		ELECTED
Adelberg, Oscar	Elizabeth	1873
Adams, George E.	South Orange	1880
Brown, George C.	Elizabeth	1871
Barlow, F. C.	Jersey City	1872
Beesley, E. M.	Belvidere	1873
Brown, G. Carleton	Elizabeth	1878
Brown, E. R.	Matawan	1883
Baldwin, Charles R.	Newark	1893
Balderston, Thomas	Lambertville	1893
Bradfield, T. N.	Newark	1895
Bogardus, O. C.	Keyport	1895
Beemer, Horace	Newton	1895
Chadsey, Jacob	Newark	1877–1886
Clarke, James C.	Jersey City	1873
Cheney, C. D.	Hoboken	1878
Chew, Edwin	Salem	1870
*Clark, H. Lyman	Rahway	1883
Crater, J. L.	Orange	1883
Curtis, J. W.	Hackettstown	1885
Crane, Frank S.	Montclair	1887
Cotton, A. M.	Haddonfield	1895
Clawson, Frank J.	Plainfield	1895
Davis, E. T.	Bridgeton	1889
Eaton, A. R.	Elizabeth	1884
Fish, William L.	Newark	1890
Fisher, Edwin	Trenton	1893
Francis, W. E.	Red Bank	1875
Gihon, H. D.	Trenton	1884
Goble, Leon	Tom's River	1893
Gregory, F. C.	Newark	1892
Hall, J. V.	Somerville	1886
Hawley, S. S.	Newark	1885
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Hardy, C. S.	Summit	1891
Hawke, W. W.	Flemington	1891
Herbert, G. R.	Asbury Park	1888
Halsey, J. G.	Swedsboro	1893
Harker, Charles	Mount Holly	1891
Hindle, F. L.	New Brunswick	1891

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Hoblitzell, C. W. F.	Jersey City	1894
Hull, H. A.	New Brunswick	1877
Holbrook, C. W. F.	Newark	1882
Howe, C. M.	Passaic	1891
Holden, G. M.	Hackettstown	1893
Iredell, Harvey	New Brunswick	1881
Irwin, A. W.	Camden	1882
Indener, Horace	Newton	1895
Jacquette, J. E.	Woodstown	1874
Johnson, S. B.	Dover	1891
Kleinhaus, D. W.	Newark	1890
Linstead, W. L.	New Brunswick	1883
Luckey, B. F.	Paterson	1883
Lummis, J. F.	Bridgeton	1889
Lowenthal, W.	Hoboken	1891
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Maynard, E. J.	Englewood	1891
Meeker, Charles A.	Newark	1871
Moore, Thomas	Paterson	1886
Osmun, J. Allen	Newark	1877
Peck, E. O.	Morristown	1871
Peck, Oscar E.	Bridgeton	1874
Pfieffer, Henry	Newark	1890
Pitman, C. P.	Freehold	1894
Pruden, William H.	Paterson	1893
Pucci, T. W.	Elizabeth	1895
Reynar, H.	Boonton	1894
Richards, William P.	Orange	1880
Riley, F. Edsall	Newark	1891
Rosenthal, W. C. C.	Elizabeth	1891
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Sheppard, R H.	Phillipsburg	1890
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Throckmorton, J. D.	Red Bank	1880
Truex, W. E.	Freehold	1883
Taylor, J. S.	Asbury Park	1895
Vandewater	Madison	1882
Van Dorn, H. B.	Red Bank	1882
Van Wickler, O.	Matawan	1894
Voorhees, C. S.	Palmyra	1893

		ELECTED
Vinson, J. S.	Newark	1895
Waas, J. A.	Hammonton	1894
Wilson, P. J.	Trenton	1879
Watkins, S. C. G.	Montclair	1883
Whitfield, George M.	Newark	1884
Woolsey, W.	Elizabeth	1888
Wells, Frank S.	Plainfield	1895

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Louis Jack, Philadelphia, Pa.
Frank Abbott, New York.
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J. S. Latimer, New York.
F. W. Maynard, New York.
T. W. Fitch, New York.
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Senator James A. Bradley, Asbury Park.
B. Holly Smith, Baltimore, Md.
J. Foster Flagg, Philadelphia, Pa.
James G. Palmer, New York.

TRANSACTIONS

OF THE

New Jersey State Dental Society.

TWENTY-FIFTH ANNUAL MEETING.

THE meeting was called to order promptly at 10 A.M., with President Holbrook in the chair. Proceedings were opened with prayer by Rev. George Bringhurst.

After the roll had been called, Dr. R. M. SANGER moved, That in view of the fact that the exhibitors were not ready and we can make but little progress this morning, we now adjourn until 2.30 this afternoon.

Dr. MEEKER explained more fully why the adjournment was necessary, and the motion to adjourn was carried.

AFTERNOON SESSION.

Meeting called to order by the President, and roll called by the Secretary.

Secretary MEEKER. I have the following communication from his Honor, the Mayor of Asbury Park :

TO THE PRESIDENT AND MEMBERS OF THE NEW JERSEY AND AMERICAN DENTAL ASSOCIATIONS :

Dear Sirs,—A previous engagement will prevent my meeting with you at the opening of your Convention this morning. Kindly say to your colleagues that the Mayor, Council, and Citizens of Asbury Park extend the most cordial welcome to the New Jersey and the American Dental Associations, and we are on call at all times to do anything that will add to your pleasure during your stay among us.

Please consider that you all have the freedom of this town.

FRANK L. TEN BROCK, *Mayor.*

The above communication was received with loud applause.

The PRESIDENT. Gentlemen, this is very kind on the part of the Mayor, and I am sure we all feel greatly indebted to him for the interest he has taken in this gathering.

I will now call upon Vice-President Sanger to take the chair.

Vice-President SANGER. Gentlemen, please come to order and give your attention to the reading of the President's Address.

President HOLBROOK. Mr. Chairman, Fellow-Members, and Visiting Friends : When one enters upon his professional career he looks out upon a path dotted with prizes for which he may strive with some hope of winning, but some of them seem so far beyond our reach that our highest flight of imagination fails to carry us up to them ; and yet, as the years go by, behold I find myself in possession of one of the highest of those prizes,—the honor of being the presiding officer of such an intelligent and representative body of my professional brothers. This honor, high as it is, is intensified by the fact that we celebrate this year an event which has fallen to the lot of few State dental societies,—namely, our silver anniversary.

Twenty-five years of active society life have passed over our heads, and we feel, as we look back upon them, that we have made a long stride forward in educational and professional work, and that to-day the high standing of our profession in this State is largely due to the indelible impress made upon it by the noble pioneers who by their courage and persistency overcame the obstacles common to all advanced professional movements, and gave impetus to the younger men to carry on their great work, until this Society stands second to none ; with a host of friends and well-wishers throughout the dental world, some of whom are present with us, and many of whom are kept away by the obstacles of time and distance only.

While rejoicing over the past and looking for new inspiration from this meeting for the future, we have a peculiar additional cause for rejoicing in the fact that for the first time in a number of years we convene together without a missing name ; every member present one year ago still answers "here" to the roll-call, and our anniversary is not saddened by a single empty chair. What a peculiar joy this is to the members of this Society is better understood when we take into account the strong feeling of brotherhood which has always marked the profession in this State, showing itself first in the local Society in the marked manner in which personal interests have always been made to give way to the good of the Societies as a whole, and again in the willing sacrificing of the interests of the local

Societies when they are in any way conflicted with the interests of the parent Society, representing as it does the combined interests of the profession throughout the entire State. I congratulate you upon this feeling; may it ever continue growing broader and stronger as the years pass by. And here let me pay a tribute to our local Societies in the position they have taken toward the dental profession, promoting and developing in a peculiar manner the social side of our profession, until the Central Dental Association is probably as well and as favorably and widely known as any dental organization, either local or national, throughout this country.

We are to be congratulated also upon the good work done by our Examining Board in its endeavors to elevate the standing of those seeking admission within our ranks, allowing only those to become professionally associated who by education and professional ability can command the confidence of the public.

The excellent program which has been prepared for you with so much care is sufficient guarantee of the good quality of the future proceedings of the convention, and it gives me pleasure to congratulate, in closing, the gentlemen who have so unselfishly contributed or expect to contribute, during the hours of the session before us, their time and labor toward the successful ending of this twenty-fifth year of our Society. As the poet has truly said, "Each to the other lends that which, either lacking, would be general loss."

Vice-President SANGER. What is your pleasure, gentlemen, as to this address?

On motion, the address of the President was referred to a Committee, to be appointed by the Chair.

President Holbrook here again took the chair.

The PRESIDENT. I have the honor to introduce to you Dr. J. Foster Flagg.

Dr. J. FOSTER FLAGG. Mr. President and Gentlemen: I come before you with a sort of dual feeling, one being that I should like to demonstrate to you that I am a guest responding to your kind invitation, and the other that in the midst of these pleasures and palaces I fully appreciate the fact that there is "no place like home;" that while being a naturalized Jerseyman (which is far worse than a natural born Jerseyman), and never expecting to be anything else, I have to sojourn a certain portion of my time over on the other side of the Delaware. I have to do a part of my work in that little one-horse village called Philadelphia, but always when I come here it seems to me as if there was something peculiar in the air. There is something, Mr. President,—it is Jersey, and that is all there is about it! It is Jersey, and when I am in Jersey I feel as most of you, I trust, do,—happy, free, and filled with an endeavor to try to do something, although I come before you with the peculiar views that pertain to those of the "New Departure" class. It seems to me as though it was our bounden duty to disagree. There are some of you,—very few, indeed, but I notice some of you, like myself, who came over with Noah in the ark, and you can remember that when the question was submitted as to what direction "New Departurists" differed from other men, the reply was for the others to mention anything that they believed in, and we did not believe that. That about covers the ground, and it will about cover the grounds of the paper that I am going to offer you this afternoon.

PREPARATION OF PULP-CAVITY AND CANALS.

Mr. President and Members of the New Jersey State Dental Society: It is with no apology or hesitation that I come before you with this so-called hackneyed subject, for both my practice and my teachings, as incumbent of a chair of Dental Pathology and Therapeutics, are so at variance with ordinarily accepted views, that I earnestly desire for them that full ventilation and discussion which shall come of presentation to such a body as this, and with the natural hope that points which have seemed to me guides to a proper practice may either be shown to be fallacious, or may be proven as truths which shall in turn guide many others to the obtaining of more comfortable, more satisfactory, and more generally acceptable results in this most important department of operative dentistry.

Disavowing anything like minute discussion, I shall strive to present only such salient points as, by their very magnitude, shall lead to serious thought on such possibilities of difference, and to the working out, each for oneself, of such incidentals as shall be essential to the harmonizing of modified practice.

It must be agreed that pulp-cavity work necessitates the *entrance into* the pulp-cavity, and this must be effected through at least a partial devitalization of the pulp; if this has been the outcome of other than medicinal application, the methods of entrance are various from only two practical considerations: first, removal of filling, naturally presupposing such to exist, and entering pulp-cavity from cavity of decay, recognizing difficulties of canal work and endeavoring to overcome them; and second, ignoring all previous considerations, and operating with the recognition *only* of the pulp-cavity and canal requirements, making such entrance as shall eventuate in a "tap," with all its advantages both for present and future possible complications.

But if, on the contrary, such pulp-irritation exists as to demand its devitalization, there is probably no other application as yet more universally resorted to than some combination of arsenious oxid.

It is in connection with these that I have long combated *one* consideration which, from constant mention and frequent discussion, I hold to be yet almost universally regarded as of much importance, and this is the *length of duration* of the application.

The periods of from five hours to a day or two (twenty-four to forty-eight hours), and by some even a week, are *lengths of duration* of application which are spoken of as though they were alike productive of good results and *preventive of undesirable ones.*

For the former (good results) I have, for more than thirty years, advocated the continuance of arsenical applications until such had accomplished the desired result, regardless of any five hours or five days or five weeks or five months (if circumstances should require it), in the full faith that length of duration of application was a matter of *absolutely no importance*, and that in fully-formed teeth (and I presume no one would ever risk making an arsenical application in any others) no undesirable sequences would *ever* follow as the results of arsenical impress.

As proof of this I had, in years long gone by, ample opportunity for following the frequent applications of arsenic which in those days were made for the obtunding of sensitive dentine, and which, having devitalized the pulps, had been the means of quieting all trouble until, in process of time, these pulps had putresced and had induced peridental irritation from evolution of mephitic gas, *precisely as they would have done had they been devitalized in any other way.*

Following such hintings I was *obliged* to abandon all *time* considerations as associated with arsenical applications, and have thus been enabled to make all pulp-cavity work, dependent upon these, in complete consonance with my patients' or my own convenience.

In this wise I always prefer that weeks rather than hours shall be the length of duration of applications; and so it is that when serious pulp-trouble unfortunately antecedes arranged summerings or other long absences from home, applications can be made which will effectually preclude any probability of toothache during such times, and which will, most probably, bring the tooth, upon return of patient, in excellent condition for thorough and painless treatment in the doing of pulp-cavity and canal work.

Having thus spoken of these applications, I would urge, most emphatically, the need for great attention to considerations *which do exist;* these are the proper placing, the precluding of the slightest pressure, the maintenance of position, and the prevention of leakage.

It is the recognition of the vast importance of these that renders it needful that no useless distracting thought should be expended, and it is these that imperatively demand that every attribute of "coverings" should be known and utilized, that thus temporary stopping, zinc phosphate, and facing amalgam should each fill its niche in this regard as no other materials or devices can.

With these views it becomes not only undesirable, but culpable, that wax, cotton with sandarac or other gum varnishes, or even gutta-percha or any other than the three coverings mentioned should be used, as no others permit the secure and proper utilization of arsenical applications.

And now, supposing that complete devitalization has been effected, pulp-cavity work becomes a simple and usually easy matter, as nothing is indicated except the obliteration of the anatomical walls of the pulp-cavity; by this we have the mouths of the one, two, three, four, or more canals distinctly defined and the bulbous portion of the pulp removed, and now the trouble begins.

Again, my practice and teachings are so at variance with usual methods, and my experience is so in opposition to many unqualified assertions, that I am compelled to give much prominence in lectures to views for which I have only antagonism *for fear* that my own experience and deductions may not be reliable; and yet I am again compelled to say that the results, year after year, make me more firmly an advocate of the practice which I give the class for the good of its patients rather than that which I give it to enable its members to pass the boards.

To begin, it is regarded, I believe, as the matter of *first* importance that all the pulp-structure should be removed, and to this end scores of pages in our journals and days of discussion in our societies are given to the methods and instruments for the effecting of this purpose, all having in view the following of every canal to its apical end, and *some* asserting positively that they always attain this "all-important" result.

I think it will be conceded that, with my long practice, almost exclusively directed to the "treatment" of teeth, and with my experience as a clinician of dental therapeutics during a college career of thirty years, I have probably entered as many, if not more, canals than any other of our country; and that I have acceptable skill in this work has been pleasantly attested to by patients, students, and many fellow-practitioners.

I therefore offer, as a testimony which may be comforting to some who, like myself, are not so successful, the statement that I not infrequently meet with canals whose entire length I feel it equally imprudent and impossible to explore.

More than this, I am cognizant of roots, in goodly number, the canals of which I *know* cannot be followed with the teeth in the hand. How much less, then, would this be possible in the mouth? In fact, this is just the barrier which, in my opinion, prevents belief in any statement beyond respectable ability as associated with canal work.

It is in this connection that I desire to combat, to the utmost, the claims of thorough removal of pulp-tissue as a matter of *first* importance.

My *fundamental axiom* in relation to all dental work is, *never do anything which, if proven detrimental, cannot be remedied.*

This rule cannot *always* be followed, but these exceptions are so very rare and are so universally associated with extremely doubtful and serious cases that, for ordinary practice, it may be said to be such as may be followed just in proportion to the knowledge of the practitioner.

This is the turning point of value of practitioner to patient always. Just as the conservation of the pulp is the *test* of value of practitioner to patient in the treatment of dental caries, so is correct treatment the test of value in canal work, and it is the immense *possibilities* which obtain with even semi-vital teeth that give to this work its immense importance.

Therefore, as in a large proportion of canals it is comparatively easy to go to the very end, I regard, as the matter of *first* importance, *that the apical foramen shall not be passed, and, above all, not enlarged.*

That it shall not be passed with the probe is because secondary or scar tissue at the apex of every root which has lost its pulp is a necessary sequence, and every irritation of such tissue is disadvantageous and renders it increasedly susceptible to subsequent irritation and inflammation.

That it should not be enlarged is because just in proportion as this foramen is normally small,—even at its smallest,—so is it possible to make a good canal filling whether that filling be of gold or of inspissated or even merely fluid medicament; and, inversely, every enlargement of this orifice, no matter how trifling, in equally just proportion renders it less possible to make a perfect filling of any impervious material, and less possible to make a medicated filling of long continuance.

I shall ignore the whole question of medicating through an *enlarged* foramen, as such practice could only be indulged in cases of abscess without fistula, and, in my opinion, in such cases would be eminently bad practice.

As a matter *second* in importance I should place the *non-perforation of the root.*

My experience has taught me that this unfortunate occurrence is most frequently a result of attempts at enlarging and following canals in the determined work of removing every particle of pulp-tissue; and I would ask which is preferable, that a portion of pulp-tissue remain or that a root be unperforated?

It is simply begging the question to say that the canal should be thoroughly cleansed and that the root should not be perforated; for in this work no one perforates intentionally, and is there one of us who has never perforated?

For myself I teach that it would be better to leave ninety and nine entire pulps rather than perforate the root of one tooth; for the ninety and nine could all be attended to if trouble came, but the perforation would be an unfortunate condition just in proportion to the value of the tooth, and could *never be other than unfortunate.*

As a matter of *third* importance, I should say that a portion of drill should not be broken off *and left in a canal.*

And here again it will not do to say that such care should be used as that a drill shall never break, for, from the most careless to the most careful, who ever expected a drill to break, when it broke? and who is there among us who has never broken off a drill in a canal?

If such an one there be, I would ask, Can he be one of much experience? Why, even those I teach, *and warn*, break them off, and they write me that they *think of me* while they are getting them out; and if in this work they unfortunately perforate, they keep on thinking of me, so thoughtfully, so tenderly!

But why should these broken drills be gotten out? This is a long story which must be shortly told. It is not that of themselves they would do any harm, but it is that, mechanically, they might, in time of possible need, preclude the utilizing of that most important factor in the combating of peridental irritation, *an open canal.*

Who has not experienced, scores of times, the giving of almost immediate relief to teeth so tender that it hurt even to look at them, and that seemed a foot, aye, three feet, longer than any other, so soon as the last portion of obstruction was removed from the canal? and how almost utterly ineffectual are efforts, frequently, until this has been accomplished?

But more than this, how painful and exhausting this work is *no one knows except those who have endured it.*

In the removal of canal fillings of gold, of amalgam, of chloropercha, of wood, of cements, there is *hope*, as there is constant progress; but when a broken drill is found, which could not be removed when the tooth was firm and work was not uncomfortable, then indeed "Who enters here leaves hope behind." In a word, it is for *this* that the broken drill should, if possible, be removed.

But, as I have said, a long, long story should here be told, for just here is the battle-ground between those who believe that if every particle of pulp-tissue is removed and the canal is filled with an impervious and indestructible material, no further trouble will ever come, and, as it is expressed, "the work is *thoroughly* done and will last for life," and those who have no faith at all in such belief, and who, on the contrary, hold it as much *more thorough* to try and fix things so that they will remain fixed, if, fortunately, no trouble comes, but that there will also be ample preparation for future relief in case exigencies demand it.

A tooth is proven to have defective enamel-formation; dental caries is established; the cavity is prepared and filled; recurrence of decay occurs; the cavity is again prepared and is refilled; the pulp becomes irritated; the filling is removed, the pulp soothed and properly protected and a third filling introduced; pulp-irritation continues in sufficient degree to eventuate in devitalization or to compel the employment of devitalizing agencies; the dead pulp is thoroughly removed, and its place supplied with impervious and indestructible material.

Could less than several pages fully describe the great change from normal which now appertains to that tooth?

Is it *reasonable* to assume that the remaining tissues of such a tooth are not only not weak and liable to give trouble, *each in its way*, but that they are so strong as to be able to maintain endless integrity even in this half-vital condition of the organ?

Is it not true that secondary tissue, with its natural weakness, occupies the space which was formerly occupied by the vessels and their surroundings which entered the apical foramen and nourished the pulp?

Is it safe to assume that having positively removed all possibility of peridental irritation from *one* cause, putrescence of the pulp, the other sixteen or eighteen causes will never demonstrate their power for harm?

The followings which I have had in hundreds of cases, and the followings which others have had in many thousands of cases, have already, I am glad to say, established widespread doubt as to the truth of such assumptions and as to the safety of such reliance.

And now, as a matter *fourth* in importance, I should give *the removal of every possible portion of pulp-tissue.*

No one will deny that just in proportion as this is done, so it is reasonable to expect success; but it is because cases of absolutely thorough removal of pulp are by no means exempt from early subsequent trouble, while plenty of cases of but very partial removal of pulp have given successes of remarkable duration, that the assigning to this work the position of first importance is regarded as entirely unwarrantable.

And I also hold that because of the possibility of doing much with antiseptics to preclude any likelihood of putrescence of remaining portions of pulp, and of the ease with which arrangements for venting and future purifying of pulp-cavity and canals can be made, it is equally unwarrantable to take any risk which could, by any possibility, eventuate in irremediable injury, for the purpose of accomplishing so comparatively unimportant a result as is absolute pulp-extirpation.

Viewing this work of canal entrance and cleansing as very important, I desire to refer to the suggestion of Dr. J. R. Callahan, as presented in his paper of July, 1894, in which he advocated the opening up of canals by means of "fifty per cent. aqueous solution of sulfuric acid."

After a year's experience of this method I can speak of it in terms of unqualified approval, and say that I regard it as *the* step in advance, in connection with canal work, which has been given us during the past twenty-five years.

Not only in fine, tortuous, and ordinarily inaccessible canals does this process make easy much that would be both difficult and dangerous, but it affords the most prompt, the most efficacious, and the most satisfactory method of entering, cleansing, and beautifully preparing the largest and most accessible canals.

I would call attention to his "pumping motion" of using the probes, both small and great, as a decided improvement over the dangerous rotation and twisting motion by which alone drills or broaches can be made available, for by this modification the danger of breaking off probes in canals is almost entirely abrogated.

I have found that there is yet danger of this if steel probes are used, as these in time become corroded by the dilute acid. I also found that electro-plated probes soon lost their gold, but with iridium-platinum and platinum-gold wire probes I have had an immense amount of comfort in doing and demonstrating this kind of work, for which I would tender Dr. Callahan the most hearty thanks.

And "now my story is done." The work which dentistry has to do after pulp-cavities and canals are prepared, eventuates in such varied and diverse practice as would require a paper longer than this for its discussion; but that which I desire to leave with you now, for your kind and thoughtful consideration, is the view that other things than the thorough extirpation of pulp-tissue are of infinitely more importance; that in the efforts to accomplish this comparatively unimportant result, frequent irreparable injuries are inflicted; that the whole idea that any work, no matter how thoroughly or perfectly done *inside the tooth*, will preclude the possibility of future trouble is fallacious, and for the good of semi-vital teeth should so be taught; that it should be recognized that *all* the other numerous causes of periodontitis, besides putrescence of the pulp, are more likely to produce that trouble with semi-vital than with wholly vital teeth; and that in recognition of all this, pulp-cavity and canal work should be such as would permit of future reparation if there be deficiencies, and of prompt and easy relief in the event of future periodontitis.

DISCUSSION.

President HOLBROOK. I will call on Dr. Joseph A. Head to open the discussion of this paper.

Dr. HEAD. I am not at all certain that I ought to be called upon to reply to Dr. Flagg, because I was brought up under his teaching, and ever since I have handled an instrument I have had the profoundest respect for his opinion. He has certainly done as much for the advancement of canal work as any other man in the practice of dentistry. But since I left college I may, to a certain extent, be said to have made somewhat of a change in my ideas; not that the original teachings he gave me were not sound, but I may have modified my methods somewhat. There are many minor points which could be taken up on the question of canal-filling and the preparation of the canal, but the principal thing we should remember in preparing canals is that in a canal where the pulp has been entirely taken out, and that canal so filled as to absolutely prohibit the entrance of micro-organisms, the canal having been first sterilized, nine hundred and ninety times out of one thousand there will be no further trouble. I don't know what the experience of other gentlemen in the profession may have been, but just as children and fools and drunken men seem to be looked after by a special Providence, so the man who accidentally breaks off drills in canals seems to be looked after. I confess that I have occasionally myself unwittingly broken off drills in canals, but I have yet to find the first instance where any serious trouble has arisen therefrom. I do remember, however, with great distinctness, a case where serious trouble arose from overlooking some pulp which was left in a canal. But we should remember that there are individual degrees of susceptibility to irritation, and that a small portion of pulp will cause trouble in one case and not in another. It has been my experience within the last three or four years that by means of the arsenic process, which I cannot prize too highly, I have been able in almost every instance to get the canal perfectly free and clear. Yet I should say that a very important matter in the preparation of the canal is that it should be so cleansed that when the filling is placed therein no bacteria that the human system cannot take care of without giving rise to inflammation should be allowed to enter.

Dr. Flagg has mentioned certain kinds of filling, and, if I may be excused, I will say that I know of a certain filling-material which for more than a year has given me satisfaction, that can be removed as easily as cotton, if it is necessary, and that will give such antiseptic results in the root that no germs can propagate in its presence. That filling-material is salol. It can as easily be put in place in most instances as cotton, and it is as easily removed. Therefore, although the preparation of the canal is of the utmost importance, yet how very important it is that we take a material which will be satisfactory as a filling ; and salol, in my opinion, is such a filling.

Dr. FAUGHT. Mr. President, my having to speak now has very much the appearance of a conspiracy. I do not know whether it is the intention of the New Jersey State Dental Association to find out what the practice is in Philadelphia, but we have a paper from Philadelphia upon canal-work, and the first and second persons called upon to discuss it are from Philadelphia. Like the last speaker, I have been brought up at the feet of Dr. Flagg. Nearly twenty years ago, shortly after I entered active practice, one of the first experiences I had was with a patient residing then in the neighborhood who was suffering from her teeth, and she was a patient of Dr. Flagg's ; the trouble was in the canal. But I do not desire, by reciting the history of her case, to bring into discussion a question of how we should fill the roots of teeth. Dr. Flagg told me he was to write a paper on canal-work and asked me to come out and have a talk with him on the subject, and you can imagine the pleasure which I derived in finding that, although time and again Dr. Flagg and I had tried to get on the opposite side of an argument, we found ourselves very nearly on the same side in this instance. He said to me he proposed to call attention to the fact that above all things he considered it infinitely of more importance not to enlarge the canal ; that he proposed to refer to the question of perforation ; that he proposed to say it was infinitely better if you broke off a drill in the tooth to get it out than it would be to spend your time in the vain endeavor to get out all the material of the devitalized pulp, and on each one of these points I have nothing to say but Amen.

From my experience, I can follow up what he has said from his experience of thirty years. That from time to time, in finding broken drills which have been left in, perforations which had been made and enlargements of the canal which had been accomplished, I have seen so much trouble caused that I might almost say that all the trouble I have had in treating teeth has come from those causes ; certainly it has not arisen from instances in which a little pulp has been left in the canal. I long ago learned that members of the profession were either mistaken or did not know what they actually did when they stated that they always, in every instance, removed every portion of devitalized pulp. I never thought I did, I knew I did not, and I long ago learned not to worry over what I could not do and what I thoroughly believed my colleagues did not do. I do not for one moment depreciate the teaching that we ought to make the effort to remove every portion of devitalized pulp. I am sure that my friend Professor Flagg desires to leave the impression upon the audience that he too believes in the absolute removal of every portion if it can be done without taking these risks, from which may grow such bad results. It has always been my rule not to spend my time and nervous force in trying to accomplish that which I believe to be impossible. In those instances I do the next best thing, and I have time and again left portions of pulp in the canal which I do not believe have ever caused any trouble. But I am not conscious of ever going to frantic efforts in cleaning a canal in a vain effort to accomplish that which afterward has to be given up as impossible, when the accident of perforation has occurred.

I do want to say one thing in this connection before sitting down, and that is that while the time element may not enter into the question of the application of arsenic, it does enter very largely into the question of the period that should elapse between the absolute devitalization of the pulp and the time of the attempted removal of the devitalized pulp. I believe we are apt to attempt the removal of the pulp too soon after the application has been made. I believe that if we allow an interval of time to elapse, concerning which we will be guided by our knowledge of the patient and the conditions surrounding the operation, consistent with the circumstances, that when we come to make the effort to remove the pulp we will find it more easy to remove it, and be more likely to excavate all the pulp than we will if we too hastily follow the action of devitalization with the operation of removal.

Dr. BOICE. Mr. President, I too am from Philadelphia, and it seems to me that you are making a raid on that city. Although it is true I am not one of those small boys who have been pupils of Dr. Flagg, the many years that I have been practicing has revealed to me that which he has taught, and I can only say amen to his proposition.

The PRESIDENT. Well, gentlemen, we have attacked Philadelphia pretty thoroughly, and I will call on some member from our own

State to discuss this paper. Dr. Hindle, will you favor us with your experience?

Dr. HINDLE. Mr. President and gentlemen, I have been practicing the treatment of the teeth and of the root-canals for quite a few years, but like some of the gentlemen who preceded me, I have been brought up at the feet of Dr. Flagg, and I too can say that I believe that Dr. Flagg meant the gentlemen present to understand that it was his intention to have the operator excavate all the pulp possible. Perhaps some of you may think Dr. Flagg meant to say that he would try to get out the pulp, and if it did not come right away he would rather leave it there than try very hard to get it out. But I do not think he meant exactly that. My experience has taught me to get out all the pulp if possible. It is one of the principal things for a man to do in order to prevent future trouble.

The latter remarks of Dr. Flagg I am particularly interested in, and that is concerning the use of sulfuric acid in the root-canal. I do not think that it has been universally practiced by dentists, nor even to any great extent, but I think if they will begin that process, using it carefully and judiciously, they will find it greatly to their advantage. As Dr. Flagg said, sulfuric acid once used, a root-canal is thoroughly cleansed. It brings out all the débris.

I have nothing further to say concerning the paper, except that I think it has been a great benefit to the Society to have heard it, and that it is one which leaves little to be discussed.

Dr. PEASE. I think that Dr. Flagg's paper was very clear,—it was very clear to me, at least. I also am one of his pupils, and I think that, whereas the pulp should be extracted as far as possible, yet its entire extraction is not of the first importance. I have seen some cases of abscessed teeth in which an attempt to open the canal revealed the fact that it was filled with phosphate. Perhaps the practitioner who filled these canals thought he had thoroughly cleansed them. When I find the phosphate filling I feel the case to be hopeless, for I could not drill it out and be sure that I was following the canal. If I attempted to do so I would, as likely as not, go through the side of the root. Now, while trying to extract the entire pulp I fill the canal, so that in case of future trouble, either through a particle of pulp that has escaped me or from some irritation of the apical foramen, I can easily open it again. My mind is much more easy when my patient leaves the office, because I know that if he comes back to me I can afford him relief.

Dr. **Crawford.** I, too, have been a pupil of the gentleman who read the paper on this subject, and with the others I desire to express my thanks and appreciation. I also desire to express my appreciation of a series of articles by Dr. Flagg, to which my attention was called some years ago, and which led up to a more correct understanding of this question of the removal of pulp. In the main I indorse Dr. Flagg's paper, and congratulate him on the amount of good he has done the dental profession in this line.

There are one or two little points in which I differ with him very respectfully. One is in the use of arsenic to devitalize the pulp. I think that ought to be guarded ; we ought to be careful in using arsenic to devitalize the pulp or any portion of it.

I will state a case in which I think the use of arsenic indiscriminately is contraindicated. In the treatment of any tooth in which there are pulp-lesions sufficient to warrant its removal, the patient's age and temperament, and the locality, should all be taken into consideration. Many teeth have, as the gentleman well said in his paper, two roots, three roots, four roots, sometimes even more than that,—roots or appendages that we call roots,—in which there are canals that demand our attention in the removal of the pulp. The patient comes in with a cavity in a tooth exposing the pulp and subjecting it to infection by micro-organisms. In addition to the disturbances of the pulp you may have an invasion of septic matter in one of the canals, and in certain cases its influence might pass beyond the end of the root. In such a case, if the arsenic was left there long enough, it might affect the other portions and go beyond those walls which nature has provided in the effort to ward off and prevent further invasion by septic influences, so that you might have a condition which would prove serious.

Another thought which comes to my mind and which for the last few years I have tried to utilize is this, that too much meddling with the canals of these teeth is, in all probability, more likely to aggravate the difficulties than to overcome them.

I have been very much pleased with the paper, as I have always been pleased with any communication from Dr. Flagg, and I want to thank him in this public way for the ideas that he has advanced.

There is one other remark I desire to make, and that is this : Dr. Flagg enumerated the various steps, as he called them, of which I believe there are four. I will not repeat them, but I want to add one more. Thorough removal is an American idea, and being

American, it is the best idea, as is everything else that is American. (Loud applause.) I mean, of course, the thorough removal of the soft tissues of the canal as far as possible. But I agree with Dr. Flagg when he says that it cannot always be accomplished; and in such cases my point is, the next best thing to do is to throw up a wall that will prevent the entrance of septic matter.

Dr. GARRETSON. With your permission, Mr. President, I would like to say one word. I am most deeply impressed with the polite character of this Society and the courteous manner in which you treat your orators. I have heard nothing but kind words in regard to Dr. Flagg, and I am very sorry to hear kind words alone, because you only bring out a man like Dr. Flagg fully when you antagonize him.

Dr. Flagg, whom I have known for many years, has not done himself justice at all, and I can thoroughly understand how he could leave possibly very wrong impressions. When Dr. Flagg said he cares nothing at all about whether he leaves arsenic in the tooth for an hour or a day, a week or a year, he speaks from the standpoint of a man (you must allow me to say this to him kindly) who is so masterful in regard to the measurements of things that I do absolutely believe, by reason of my close intercourse and experience with that man, that when he sees a tooth and looks upon it individually he so absolutely measures the receptive character of the pulp and the temperament of the individual that he knows just exactly how much arsenic to put in that tooth, which might be left there forever, just as he would know that one and one equal two. I want to do Dr. Flagg the justice of making this understood. If you want to bring Dr. Flagg out you must attack him. He never pipes so well as when he is on his own dunghill. I think it is because he knows so much that he doesn't present the thing quite roundly enough.

Arsenic is a devil, arsenic is an angel; but if Dr. Flagg had said to some young man here that he could take a tooth, fill it with arsenic, put some amalgam in it, or some gutta-percha, and send the patient to Europe, and had left that unexplained, there might be some little probability that there would be a good deal of trouble arise, and that when the patient came back the young man would do Dr. Flagg the justice of going for him pretty roughly for suggesting the idea, or else the patient would go for the young man for making such a filling. But arsenic is antiseptic, arsenic is a germicide, and Dr. Flagg means to say to you that a man who intelligently practices the treatment of the dental pulp, and has so informed himself in regard to the relativity of arsenic and pulp that he knows just exactly how much arsenic will do just exactly so much work, can use it successfully.

But in making the broad statement that he does, I fear that he makes a mistake.

I thought I could not leave this hall without doing this justice to Dr. Flagg. He has the last talk, and when he comes to reply to the discussion, no doubt he will further enumerate some of these little points. (Applause.)

Dr. WALKER. Mr. President, while a great many of the speakers are from Philadelphia or the State of Pennsylvania, and graduates of the college which our illustrious friend is from, I, who am from New York, would like to make one or two remarks with regard to the treatment of Dr. Flagg concerning going through the roots of teeth.

The subject of pulpless teeth is old, as the speaker himself remarks; and as our illustrious friend Dr. Truman has himself remarked, "it is a sort of chestnutty subject."

I am not a professor in a dental college; but for fear some of the younger men of the dental profession might think that a remark of that kind coming from our illustrious friend from Philadelphia is wrong, I want to say right here that when a professor of a dental college will stand upon the platform and say, "I have gone through the roots of teeth," and hold up his hand like that (illustrating by raising the hand, and extending and shutting the fingers rapidly),—I think I counted forty-five times,—to indicate the number of times that he has gone through teeth, it should be modified to some extent. I have practiced dentistry myself in the city of New York for twenty years, but I am so careful that I can only recall one occasion when I have gone through the root of a tooth,—just one. I did it; I was sorry; I looked upon that tooth just as I would look upon a child that I had lost. I say I think it is a great mistake for a professor of a dental college to come before the young men attending a meeting of the Dental Society of New Jersey, and to hold up his hand and say he has gone through the roots of teeth so many times.

All I have to say in the treatment of pulpless teeth is this, "My dear young men (the older ones will take care of themselves), be very, very careful and never, never, if you can possibly help it,—for then it will only be by mistake,—go through the root of a tooth." It might happen by mistake, perhaps once in a lifetime, but it ought never to happen again.

That is all I have to say in regard to Dr. Flagg's paper.

Dr. OSMUN. The gentleman who sits just behind me (Dr. Garretson), voiced about what I was going to say in reference to Dr. Flagg's paper. It is an admirable paper, as all things coming from him are, admirable and intelligent, so that the most ignorant soul understands just what he was driving at. He talks in his own emphatic way, and I am afraid that perhaps that which he has emphasized might not be thoroughly understood. Every man who practices dentistry or any other profession must have his ideal, and the ideal in pulp-treatment is cleanliness. The attainment of that ideal varies with the different individuals. We all know that the more we approximate cleanliness the better the result, all the other things being equal. When Dr. Flagg stood here with his position in dentistry for so many years as a teacher, so many years as a writer, with his emphatic way of putting things, he was liable to mislead some of the younger members of the profession. When I first commenced the practice of dentistry, some twenty years ago, a new departure system was then on the threshold, and I read very carefully his articles, and not having had the experience that I now have, I was misled. I could read those same articles again to-day and could differentiate ; I could take out that which was weak, and that which was strong, and that which was desirable to include in my practice, but then, not having had the experience of actuality, I was misled by them. That is why I stand here now ; not to combat Dr. Flagg, but to say to him when he closes this discussion, to so hedge around the remarks he has made that the young men will not not be misled by them. To put arsenic into the teeth and leave it there one hour or one day, or one month or one year, needs a little more explanation than the paper gives. One of the speakers very aptly remarks that Dr. Flagg has had such experience, he has gone through this practice so many times, that perhaps there is an intuition given him that the average man does not have, and when he applies arsenic in a tooth he sees all the possibilities, all the environments, and all the weaknesses that are there, and perhaps he can read better and further than we ordinary men. So that his remarks need hedging about. When he says it is better to leave pulp-tissue in the canal rather than to make an earnest effort to remove it all, he is liable to mislead some men, and the tooth may be less thoroughly treated than it would be because the practitioner has not made his most earnest effort in the case.

So, I might go on and enlarge, but it would only be a repetition of this one idea, that I want Dr. Flagg when he addresses us in the closing of this discussion to enforce and emphasize and hedge about what he has said, so that the young men may not be misled by this; it is not false teaching, it is good teaching, but it wants to be emphasized that we must use every effort that lies within our power to remove every particle of soft tissue from the tooth, sterilize it thoroughly, fill it to the apex, so far as in our power lies, and then trust to luck and Providence for the balance. (Applause.)

Dr. TRUMAN. Not so much because of any remarks that Dr. Flagg has made as because of some remarks that have been made regarding them, there has been called to my mind the first time I ever met the gentleman who has addressed you this afternoon. As near as I can recall, it was some thirty-five or thirty-six years ago when I first met Dr. Flagg at the Pennsylvania Dental Society meeting. The subject then under discussion was arsenic. The doctor brought to that meeting two little flower-pots filled with earth, in each of which he had planted a seed, one of which he watered with ordinary water, and the other with water in which a portion of arsenic was dissolved; one had its proper growth, in the other the germination of the seed had not taken place. At that time Dr. Flagg was somewhat of an authority on the subject of arsenic, and I think we ought to receive what he tells us with a great deal of respect and consideration. A man cannot go on carefully experimenting year after year for nearly forty years without knowing a great deal upon the subject.

I desire also to make a remark with regard to going through the root-canal. It is a thing we ought not to do, and Dr. Walker tells us that in twenty years he has only gone through one. If we go back for twenty-five or thirty years and examine the instruments that we had in use then as compared with those that we have to-day, we will find a very great difference, and, no doubt, our friend Dr. Flagg's unfortunate experiences were with the instruments made at that time.

I cannot say that I have only gone through one; I have gone through more than that, but not of late years.

We ought always to take broad views on this subject, and remember the difficulties we labored under when our fathers were at work.

Dr. WALKER. For fear Dr. Truman might make some mistake, I will say that it was in 1872, and that was the only tooth I ever perforated.

Dr. ADELBERG. As one of the younger members of the profession who is liable to be misled, and who is always willing to learn, I would like to ask Dr. Walker what system of measurement he employed so as to know exactly that he perforated even a single root. Will he kindly give us the system of measurement?

Dr. WALKER. I said nothing about a system of measurements. I can demonstrate it at any time, and not only so, but I repeat that I never went through a root but once in twenty-three years.

Dr. B. HOLLY SMITH. I can only say from what I have known of Dr. Flagg, the author of this paper, that heretofore there has not been much occasion for apologists for him. I have seen him when he has championed his own cause without fear or favor from any quarter, and it seems a little remarkable that any man should have risen on the floor of this meeting to defend him or do anything of that kind. I have never regarded him as a man who needed any apologists.

In regard to the suggestion of Dr. Walker as to perforating root-canals, I believe I have had a larger experience than he, but I do not believe I ever perforated a root-canal. Early in my professional life I began to treat root-canals as carefully as possible, without doing anything more than to get out as much of the pulp as possible; and if that practice is pursued, I think there is but little danger of perforating. Perhaps Dr. Walker has not used some of the drills that have been suggested.

There are a great many suggestions of value in Dr. Flagg's paper. Certainly they are of value to me, a young member of the profession; but while it always has seemed that old things should be regarded with reverence, still I have a certain feeling of shock in regard to some things that he has said.

I was taught when I graduated, that to leave arsenic in a cavity for more than twenty-four hours was a serious offence. I did not hear that part of Dr. Flagg's paper which referred to leaving arsenic in the pulp for years, but I do not think that Dr. Flagg has any more right, on account of his experience or otherwise, to tamper with arsenic than I have, and, while he may be more experienced in discerning temperaments, etc., I take it that the difference is not so great, that if one patient can stand arsenic a year another would not be able to stand it six months. I do not attach much importance to the suggestion which has been made, that Dr. Flagg is so very skillful and expert that he can tell at a glance whether a patient can stand arsenic twenty-four hours or a year. I believe that if any patient can stand arsenic for a year, the majority of them could stand it six months. I do not believe arsenic could be left in any tooth for that length of time without some possibility of trouble ensuing.

I feel, however, that while the subject of the doctor's paper may be hackneyed, there is much to be learned through the experience of different practitioners in dealing with various materials used in filling root-canals. I do not believe there is so much importance attached to the entire removal of the pulp as we have supposed. I believe that the doctrine of doing all we can, and doing it honestly and faithfully, is the proper one. Heretofore it has been said that we must remove all of the soft tissues, and, if necessary, take a drill and drill them out, but I believe a great deal of that is unnecessary, and that the less drilling you do in the canal the better. I believe that other methods should be used, and there should be less drilling.

Dr. TENISON, of New York. Mr. President and Gentlemen: I rise simply to state my experience during thirty-five years of professional practice, both to protect and defend Dr. Walker as well as Dr. Flagg in regard to perforation of roots. I don't think that Dr. Flagg when he put his hand up this morning in that manner (illustrating) signifying twenty-five or thirty roots that he had gone through, he wished to convey the idea that he did so in every case intentionally, and I think our friend Dr. Walker at the time he went through the root of a canal did not do so intentionally. I don't think that in the later years of my practice I have ever been through one except to reach a diseased part. I went through one when I first commenced practice accidentally, and I felt very much alarmed about it at the time, because I had no anatomical knowledge of the parts that I was drilling into. It was a first upper molar, and I was doing what I was told ought to be done at that time, thoroughly cleaning out the roots, and I kept on drilling and drilling and my instrument suddenly went through and went I did not know where. I took it out in alarm, put some gutta-percha in the tooth, dismissed my patient, and took a work on anatomy and read it to find out what I had done. I found where my instrument had gone—into the antrum of Highmore. Not knowing what the result of the operation might be, upon the patient's calling a few days afterward, I advised him to have the tooth extracted. I wanted to hide the result of my operation in case he ever got into the hands of another dentist. So I want to say that I do not believe Dr. Flagg ever went through the apex of a root intentionally, except to reach some diseased spot, nor do I think Dr. Walker ever did ; I think it was a pure accident at any other time. I do think, though, that when such an accident happens to us we are very apt to use abundant care in the future. That has been the case with me, and for that reason I have never sought to remove absolutely every particle of devitalized matter. I do it as far as I can, put in a temporary filling, and seal it up for the time being ; if I find everything is right in the course of time I fill permanently. That is my method of treating devitalized teeth ; I remove everything I can, but never feel uneasy if a little of the nerve is left. It used to be the custom at the time I went into practice to devitalize the pulp, remove it, leaving the nerve or nerves in, not filling the nerve-canal or canals, but simply filling the pulp-chamber, and in few cases, not more than one in ten, did we ever hear anything from it ; if we did, the patient would come back and complain of very great pain from heat or cold, we used to drill through the root to give it a vent, and the patient would go off thinking what a wonderful man that dentist was, for they had not a particle of pain afterward.

Dr. **Freeman.** Although I am not a pupil of Dr. Flagg, nor am I from Philadelphia,—I am from New York,—still I think that the gentlemen present do not understand what Dr. Flagg sought to bring out. In the first part of his paper he tells you how badly he has been treating roots until he came to that lovely method of Dr. Callahan, the use of sulfuric acid, fifty per cent. But he forgets one point. He does not add that he neutralizes that acid in the root by the action of soda ; if he does that he has a root that is thoroughly cleaned and thoroughly antiseptic.

Dr. **Moore.** Mr. President, I desire to learn from this audience what is meant by going through the root. I don't think the same difficulty is attached to going through the casing as there is to a puncture of the root, and I want to know whether they mean going through the canal is so very dangerous, or do they refer to a puncture of the root?

Dr. **Winkler.** I enjoyed the paper of Professor Flagg, and appreciate fully the value of his statement that it is not always necessary to take out all the sarcous element from the nerve-canal of a tooth, especially where those canals are extremely fine. I have many times seen teeth so treated that have caused no trouble for long periods of time. The matter of arsenious applications is one in which I agree with him in the main most heartily, but I have never kept arsenic in a tooth for more than twenty-four to forty-eight hours of my own free will. I have had patients stay away after an application of arsenic for as long as two weeks. I never saw any injurious results where it had been carefully inserted and properly covered, although I don't know from experience what the result might be of leaving it in too long. Dr. Flagg's statement of his practice makes me feel that my fears in that direction were groundless.

In regard to going through the apex of the root, I don't see any such terrific danger in it as some seem to fear. The result of it is simply that it may place the operator under the necessity of exercising more skill in filling the root, or at the worst of performing a piece of minor surgery, alveolotomy. What can the gentleman do who is so afraid of perforation in cases of necrosis at the apex? I have had the misfortune to go through *the side* of the root once or twice in my life, and in one case it was necessary for me to take off the end of root down to the perforation, and the result of the operation was perfectly successful.

Dr. BREWSTER. I want to indorse what Dr. Flagg has said in regard to the application of arsenic. When I was on the hospital staff, a college friend of mine had toothache, and I used arsenic in that way. That was eight years ago last June, and that arsenic is still there. When I made the application, I told him, "Now, doctor, there is something that will do for a reasonable length of time; but presently I will remove it and complete the filling." After a few days he declined to let me have anything to do with the tooth. From time to time, from that time until now, I have made inquiries of him, and requested permission to examine, until at last he tells me that if ever I mention the fact to him again he will cut my acquaintance.

The only time I ever had any misfortune with arsenic was where phosphate had been put in in the lower jaw and a leakage was afterward established, and the leaking out did cause some danger. I have never had any more misfortune than that; and I agree with Dr. Flagg in this, that so long as the cavity is sealed badly the limit can never be established, nor any rule be made that will apply to all cases, and I think it is perfectly safe to say that when the filling is tight there is a small chance of any difficulty ever arising. I have been a little bit amused at the different methods of practice. At the time when I first began attending dental meetings I was impressed with what Dr. Atkinson advised. His principle was, "Always go through until you get fresh blood;" but we don't do that now. Experience has shown that to be a bad thing.

In conclusion, let me say I think it is always a good thing to apply arsenic to cavities such as Dr. Flagg mentioned and to fill teeth as he suggested.

The PRESIDENT. I would like to call on Dr. Rowland, of Illinois.

Dr. ROWLAND. I appreciate the compliment you pay me; but the subject, in my judgment, has been already so thoroughly discussed that I would not feel justified in taking up the time of this Society by continuing it any further.

Dr. JAMES TRUMAN. I would like Dr. Flagg to answer this question for my own satisfaction, when he comes to reply: If one-hundredth grain of arsenic will destroy two-thirds of the pulp in twenty-four hours, why will it not pass on and destroy the pericementum; and what is it that renders the arsenic harmless when the time comes that it ceases to act upon the tissue? I want him to answer this, because it is important.

Dr. GIBSON. When arsenic is first applied, is it not an irritant? After that irritating stage, be it long or short, has passed, does it then have a soothing effect? When old hunters kill their game and take the skin off, they treat it with arsenic to preserve it. Now, can Dr. Flagg tell me at what stage the preservation ceases?

The PRESIDENT. If there are no further remarks, Dr. Flagg is now called upon to reply.

Dr. FLAGG. Mr. President and my dearly beloved friends, and all you boys and girls who have sat at my feet, you all know, of course, that I am not here to retract one single iota. I did not come before this Association with a series of remarks in order to get you to spout upon them and then get up and say, "I didn't mean it." When the paper is published you will see that it is very carefully framed. I do not think there is a weak plank in the whole ship; I do not think there is one thing there that should be taken back.

Do you know it just tickles me almost to pieces when my skeleton friend from New York, "W. W. W.," says that he has only been through one canal. Says I to myself, "Hooray for New York! Here we have one man among us who has only been through one canal." In his New York Wall-Street way, where they deal with millions and millions, he said that I put up my hand like this.

(Illustrating by raising the hand and opening and shutting the fingers a number of times.) I never did any such thing. But that's New York, that's Wall Street! I very carefully thought to myself about the number of canals that I probably had perforated, and I thought of five and put up my hand once, then I thought of ten (raising the hand again), fifteen (raising the hand), and twenty (again raising the hand), and I ventured on twenty-five; I did that hesitatingly, but I wanted to tell it all; I did not want to draw back one single bit, and I do think that during my "thirty" years of practice I have been through about twenty or twenty-five roots. I never went through one of them on purpose. I have perforated quite a number of lower molar roots where I diagnosed disease in the bifurcation of the root, and I thought the easiest way to get at it was to make a perforation and treat it as we treat perforated teeth. But I never perforated a root in doing canal-work when I thought I was going to do it. I am as careful,—not as careful as my friend Walker,—but as careful as I can be with what little experience I have had, and I went on and on until, little by little, mostly when I was working to get out probes that either I had got in or some one else had—the perforation occurred. I have had lots of probes to get out that have been put in by others. When they put a probe in the canal and get it around the corner,—way round by the little church around the corner,—they get stuck there sometimes and they come to me to get it out, and I work at it patiently, patiently, patiently, and I get it out, sometimes, and once in a while I perforate. I do it carefully, I do it gently. It is oftentimes only the least little bit of a perforation, hardly larger than the point of a pin, and yet I get the little mark of blood that our good friend Atkinson used to talk about, and I am very sorry to have got it, but I go on and do the best I can, and even if the tooth is not as good as it was, I have done the best I could with the sad work of myself and others.

Now there is a great deal for me to reply to, but I didn't come here to speak, I came here to listen. I brought a big basket with me, and I am going to fill it up by listening. I have been gathering things together to work on this winter, if I am spared.

I cannot answer all these things now; I am very much obliged to all who have made remarks on my paper; I am obliged to my good friend Dr. Garretson, who stood up for me. Why, he couldn't help defending me. It is not in him to do anything else. We have gone on, shoulder to shoulder, for "thirteen" years. Dr. Truman talked of meeting me thirty years ago (laughter), but of course I can't remember as far back as that!

When you read this, my paper, at home, I feel satisfied that you will say I have not done a bad day's work, and you will be satisfied I have nothing to retract, and you will say with me that it is vastly more important that you should leave pulp débris in the end of the canal, if necessary, rather than go through the root.

There is one little point, however, I do want to say something about, and that is as to the use of arsenic. The remarks on that subject remind me of something I saw published in a paper called *Life;* that's an almighty smart little paper, even though it does come from New York; it is the smartest paper we have in the country; it beats anything Philadelphia can do! It is the best. I remember I saw in there a picture of a young man sitting beside a girl and he was pressing both of those large sleeves of hers, one upon his manly breast and the other with his manly arm, and he was kissing the young lady's mouth, utterly regardless of microbes and everything else, and he says to this young lady, "My love, you are the first girl I ever kissed." "Is that so?" says she; "if it is, my young friend, I guess we had better stop, for I want you to understand that I am no kindergarten!" (Laughter and applause.) I have considered this organization a mature association of intellectual men, and I don't want to come here and tell you that I am kissing for the first time, for that is not my case, and a great many of you perhaps have been kissed and kissed and know what it is and like it; so do I! I don't come to you as "young men." I don't talk to you as I would to them when they come to me in the winter. I don't calculate that you are going to take this thing in any other way than as intelligent members of the New Jersey State Dental Association, and I want you to understand that I am simply amazed at the question which has been asked me by my venerable friend from Philadelphia. To answer the question as to why arsenic, if one-thousandth of a grain will destroy a certain portion, the balance of it will not go through the apical foramina, I would say, read the Proceedings of the American Dental Association of, well, I will say, "thirteen" years ago; it is all there and all answered.

I would like to ask him whether he knows that if he takes a piece of cotton and puts his one-thousandth of a grain of arsenic on it and puts it in the cavity with the exposed pulp and devitalizes the pulp and takes the cotton out and puts it into another and devitalizes it and puts it into another and devitalizes it, and then puts it into another and devitalizes it, and takes it out a hundred times and devitalizes pulp a hundred times with it, he would have his one-thousandth of a grain of arsenic left on the cotton? I would like to ask him if he knows that; if he doesn't, he ought to. Scarcely a winter passes but what I use the same cotton in eight or ten teeth, and then put it through a delicate little test and show that there is just as much arsenic left there as there is upon a fresh piece of cotton which is just like the piece that has gone into ten teeth, and now he asks me about that!

Dr. **Truman.** Excuse me, but I did not ask you about that, neither did I say one-thousandth part of a grain; I said one-hundredth of a grain.

If you have as much of it left after it passes all through these different series of teeth, why does it not go on further and destroy beyond?

Dr. **Flagg.** If all these pulps are taken out, say ten or twenty of them, and the little end cut off where the arsenic touched, and then all the remaining portions are put into a test that tests as finely as the two hundred and fifty thousandth part of a grain, you cannot get a trace of it. That has not been done once only; why, dear me, my good old friend Buckingham did that years ago (after my friend Truman met me), and Morton did it, and Leeds did it, and Howell did it; all the chemists have done it pretty nearly; they all tested these things for me, the same as the cotton has been tested which has been taken out of the canals. Any of you, when you go home, can take a piece of cotton and make your application with your arsenic and cover it in; there is the test.

When you read the paper you will see how very exceedingly strenuous I was to say that this arsenic should be carefully applied and perfectly covered and without the slightest pressure,—and I did not say that as far as my experience is concerned, I would not, under any circumstances, cover an arsenic preparation with anything but one of three things,—temporary stopping, because it is almost non-leaking; zinc phosphate, because it is non-leaking; or "facing" amalgam, because it is non-leaking. If you have any other materials that are non-leaking, I do not know it, but you can tell me; I would be glad to learn it. Gold is not non-leaking; if you could spend a sufficient length of time and put in a gold filling,—but you will not do it while you have "facing" amalgam, for such an amalgam filling one and one-half inches in diameter would never leak. Zinc phosphate, the very first sent to this country, was tested at once for leakage. You know how long ago that was, in the seventies or early in the eighties. There it is in existence to-day, and it has not leaked in fifteen years. How soon is it going to leak?

Now, I did not advocate leaving arsenic in for fifteen years as has been suggested, I did not even advocate leaving it in a year. You will read the paper; I have not anything to retract, not a word. I said I took no notice as to whether it was five hours, five days, five weeks, or five months. Five months are not a year. That is all I said in the paper, for I was very careful. But I will tell you what I could have said. I could have said, as my friend has said for me, because I have had cases almost like it,—he sees me and "goes three better,"—I have had them in for five years; he says eight. I would have said then what I do say now, that if arsenic is put in in such quantities as it ought to be put in,—I never put in one-hundredth of a grain of arsenic, I generally put in what our tests for arsenic tell us is from one twenty-fifth to one-fiftieth of a grain; I take up about as much of the preparation as I get on the point of my instrument, and I think that would be about a twenty-fifth or a fiftieth of a grain, and I take it that way simply because it is easy to handle that amount, just the same as it would be easier for me to handle a fifty or twenty-five pound dumb-bell than a two hundred pound dumb-bell; simply because of the fact that you want to be sure that you have a reliable amount of arsenic there. I will say, however, that we recognize that if the arsenic application should by any means get out *bodily* it would do no harm; for it could get out by being in a frail tooth and the patient bite on something hard and breaking the tooth and letting out the filling-material, and the patient might swallow the piece of cotton with the arsenic there and take the twenty-fifth part of a grain. But what harm could it do him? It would simply be a tonic dose. Why, you could fill a tooth in the morning and have the filling come out and be swallowed, and fill it again and again and have it occur three times during the day, and they would be but tonic doses of arsenic. I believe that if arsenic remains in that tooth, the twenty-fifth of a grain,—I would say this to you now on the floor, not in the paper, but on the floor,—if it stays in there, I said in the paper, no trouble would ever come to that tooth from that arsenic. Now I say that boldly again, and you may all go home and experiment with it. If you do not believe it, if my experiments are not sufficient in that direction, you ought to do it; you ought to make experiments just the same as one of my boys did. A patient called on him with a cavity in a lower molar, and she was just about to take her passage for Europe to spend the summer there, and he made a nice application and covered it with submarine amalgam. He told her that it might ache a little, but not for more than a day or two, or that she might have a little sore tooth for a short time but that would pass away, and when she came back from Europe the next fall he would enter the tooth and continue the work. What a peaceful, comfortable thing it was for that boy to know that he could do that. I have done it,—well, I have done it (illustrating by raising the hand and alternately extending and closing the fingers),—very many times.

Now, friends, I told you that I wanted you to consider if there was not reason for the belief that a tooth that is poor at one place would be likely to be poor at another. I want to ask you to think whether that kind of a pericementum would be likely to hold a tooth intact without any pulp. What is that dentine? It is dead dentine against living cementum. Is this as good as live dentine and live cementum? It cannot, under any possibility, be as good, and under these circumstances, what are you going to do when typhoid fever, or grippe, or pneumonia comes, or when pregnancy comes, what are you going to do with a lone tooth that has to be eaten on all alone? That tooth is all there is left. It is all the eating surface there is, and don't you want to recognize that that pericementum will be likely to give out, and having given out, don't you want to have that tooth without enlarged apical foramina, without perforated roots, without drills in its canals,—don't you want that? (Applause.)

On motion, the Association adjourned until 8.15 o'clock P.M.

FIRST DAY—EVENING SESSION.

The meeting was called to order by the President, and the Secretary called the roll.

The Secretary read a communication from the Dental Society of the State of New York concerning a resolution passed by that Society at its last meeting, condemning the use of secret preparations known as local anesthetics, and requesting this Society to take similar action upon the subject; which communication was referred by the President to the Executive Committee.

The Secretary reported that the Committee appointed on the President's address were Drs. Barlow, Moore, and Beesley.

The Secretary also reported that Professor J. Foster Flagg, D.D.S., had been proposed for honorary membership, with Dr. R. M. Sanger and Dr. Chas. A. Meeker as sponsors; also reported that Dr. J. F. Kitchell, of Perth Amboy, had tendered a letter of resignation.

The above matters were referred by the President to the Executive Committee.

Dr. HENRY W. GILLETT, of Newport, R. I., then read the following paper:

ELECTRO-THERAPEUTICS—OBTUNDING SENSITIVE DENTINE.

Mr. President and Gentlemen,—It is my intent to present to you certain facts concerning a means for alleviating human suffering, and to burden you with as few personal opinions as may be.

I wish to present no theories, but to give you such a description of methods and results, as I have worked them out in my own practice, as shall enable the profession at large to make use of these methods, believing that you will find use for them and expecting that you will improve upon them.

As an opening, however, I venture to make two assertions, the first of which I make without fear of contradiction from those of you who have suffered at the dental operating chair, either as patients, operators, or both. It is this: one of the greatest, perhaps *the* greatest boon to be desired by our profession, our clientèle, and by those who would be of our clientèle if the terrors of our ministrations did not prevent them, is that our operations in general should be nearly or quite painless, and that this end should be gained without sacrifice of other desirable conditions.

The second assertion, which may be more of a strain upon your credulity, is this: the day has arrived when this condition may obtain, and it is only necessary for the dental surgeon to make use of the means at his command to eliminate nearly all the suffering heretofore accompanying dental operations.

The key to this assertion is to be found in the capacity of the galvanic or continuous current of electricity to carry liquids with it as it flows from the positive to the negative pole through the tissues of the human body, notably in this particular connection, solutions of anesthetic drugs. This property of the galvanic current is no new discovery.

The first record I find of its use for producing local anesthesia dates back to 1858 or 1859, but its present use by electro-therapeutists has grown up in the last eight or nine years.

The only reference that I know of concerning its use for anesthesia in our specialty is a short article, lacking in many essential details, by Dr. A. C. Westlake, in the *Dental Cosmos* for November, 1892.*

Recently we have begun to hear of cataphoresis for bleaching discolored teeth, but this, it seems to me, is one of the least important of its uses, and I shall speak of it here only to note that the current strengths mentioned by Professor Morton in his experiments described in an article in a recent number of the *Cosmos*, are entirely inadmissible for use through living dentine.

The current strengths mentioned by Dr. Westlake are scarcely less so. I will not take your time in detailing historical experiments which you may find recorded in the article by Dr. Frederick Peterson in Bigelow's International System of Electro-Therapeutics, nor will I attempt to deal with the electrical principles, since an abler authority is to address you along that line.

Contenting myself with the statement that the galvanic current has the capacity to carry with it into and through the tissues of the body various liquids when the necessary conditions are observed, I wish to come at once to a description of apparatus, and the procedures necessary to obtain the conditions which shall enable us to force an obtunding drug into the tissue which gives our profession and our patients so much trouble and suffering, namely, the dentine of the living teeth.

The first point to be noted is that the current must be *completely* under the control of the operator by apparatus which shall allow him to graduate his quantity of current perfectly, and to pass, by almost or quite imperceptible gradations, from one extreme to the other of the capacity of his apparatus, the low extreme being represented by no current at all, or at least one too small to measure.

The apparatus required consists of the following: some constant source of electricity of considerable power, a rheostat in such relation to the source of power and working circuit as to provide for absolute control of the current, conducting cords, electrodes, and a good milliampèremeter.

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* Since writing the above I learn that Dr. D. F. McGraw, now of California, read a paper relating to this subject before the Chicago Dental Society in 1887 or 1888, and that his article was published in the *Dental Review*. I understand that he discontinued the use of the method because of defects in the apparatus then obtainable.

The experienced operator may, perhaps, dispense with this last, but it is a very desirable adjunct.

The source of current may be any of the continuous current commercial systems for electric light and power supply, or a set of primary batteries of sufficient power to furnish a maximum of at least fifty volts.

Systems used for running street cars, or having other large but intermittent demands upon them, are not suitable. The supply must be a steady one, and it is well to have an apparatus with a capacity of four or five hundred milliampères if the source of current is one of the commercial systems.

In my own practice the ordinary continuous current, known as the one hundred and ten volt Edison current, gives satisfaction.

The adapter here shown is for use with this current.

The manufacturers, the Electro-Therapeutic Company, of No. 32 E. Twenty-third Street, New York, assure me that they are prepared to furnish apparatus which will enable the same results to be obtained from any of the continuous current electric power systems in ordinary use, or to supply batteries of sufficient power to accomplish the same end.

The rheostat must be so made as to be capable of giving very fine gradations of current.

The ordinary rheostats in use are objectionable, as they cut in or cut out resistance by distinct steps, corresponding to lengths of wire or blocks of carbon, and these steps are, so far as my experience goes, too large for this work.

I used an Edison adapter for a time, after modifying it by adding a supplementary rheostat, but the main rheostat soon developed marked defects for this work and was discarded for this less cumbersome and less expensive adapter, which is wired on a different and, I think, better plan.

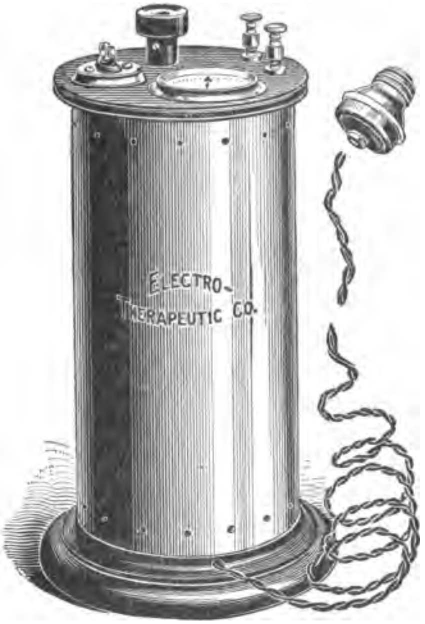
(The adapter and electrodes used by the essayist were here shown and described.

The illustrations and accompanying description seem to make further description here unnecessary. The positive electrode is readily converted into a single-pole electrode for use on gum by slipping a rubber polishing cup on the end of the platinum point.

The cup is then to be packed with cotton saturated with the solution it is desired to use.)

The positive electrode for use in the cavity should be platinum tipped; other metals may stain the teeth.

It should be of convenient size and shape for reaching the ordinary cavity. The negative electrode may vary in shape according to the place to which it is to be applied. This may be the hand, the neck or face, or the mucous membrane of the mouth. The essayist prefers the side of the face. Given through the hand, the current may produce numbness of the fingers and arm while passing, and for a few minutes afterward, in patients especially sensitive to its effects. The shorter the distance the current has to travel through the body, the less the resistance to overcome and the less liability to discomfort. The negative electrode should end in cotton, sponge, or flannel, and be of considerable size; two inches in diameter is not too large. The obtunding solution used by the essayist is a twenty to thirty per cent. solution of cocain. The method of procedure is as follows: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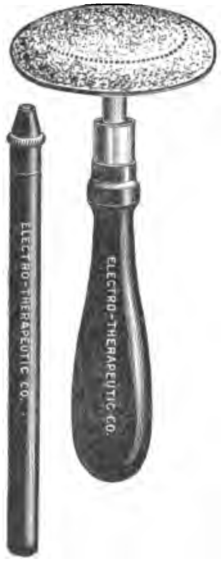
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ELECTRO-THERAPEUTIC CO.

Having the adapter connected to the source of electricity, and the patient in the chair, preferably with the rubber-dam adjusted to avoid leakage of current, the contact of the rheostat at a point giving the weakest current at the binding posts, the sponge of the negative electrode well wet with water or a weak salt solution, and applied at the selected point, the cavity in the tooth packed with cotton saturated with a cocain solution, apply the positive electrode to the cotton in the cavity, and begin to increase the current by means of the contact lever of the rheostat.

As the current increases, note any signs of discomfort, and wait for them to disappear before adding more current.

These indications from the patient must be your guide, as the current passing at first is too small to be measured by any meter that it is feasible to use. I have once seen four milliampères recorded at the end of a treatment; but this is rare. One-half to one and a half milliampères is the ordinary maximum of current actually recorded as passing through the tooth at the end of an application.

It is not necessary that the current be forced beyond the point where the patient can bear it without discomfort.

Of course, the more current used, the more prompt the effect.

The first sensation is a feeling of pressure, cold, or possibly a slight pain in the tooth. If the current is forced, this pain may extend to the other teeth and the head; but there is no need for this.

A weaker current applied for longer time is efficient.

Always work up gradually in turning on current, and decrease it in the same way.* All sudden variations are painful for the patient.

Never make or break contact with the electrodes without reducing the current to a very small one. It is absolutely essential, for general success, to be able to make contact with an imperceptible current, and to increase it gradually with no breaks or sudden changes of quantity.

In long applications see that the cotton in the cavity is kept wet with the solution.

Before making the application, see that all metallic fillings in the immediate vicinity of the cavity are covered with gutta-percha in such a manner that the current cannot reach them.

The current given off into a tooth by a metallic surface is always painful, and generally sufficiently so to prevent the use of any but the weakest currents. Avoid making connection with the gum or other soft tissues with the positive electrode, as that will provide an easier road for the current to follow than the one through the tooth.

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* Gradual decrease of current is found to be less necessary with the latest improved apparatus.

If it is desired to cocainize or otherwise affect the gum, apply the positive cotton-covered electrode to the gum instead of the tooth, or apply the two electrodes, one on each side of the gum, having the solution it is desired to introduce on cotton inside a rubber cup to prevent its escape beyond the area it is desired to affect.

For removing the pulp the method is the same as for cocainizing dentine, although it is often possible to save time by using cataphoresis only for benumbing the immediate point of exposure, and then injecting cocain as described in the clinic report of the First District Dental Society for March last.

The time needed for thoroughly benumbing the dentine, so a cavity may be painlessly excavated, varies.

I believe eight minutes is the shortest time I have recorded for complete success.

Five or six minutes will often permit the removal of all decay, but the effect at first seems to penetrate only a short distance, and if this layer is cut through, another application is needed, to enable one to cut grooves in sound dentine painlessly.

Entire suspension of sensation to maximum current, or loss of the sense of contact of the electrode by the tooth, indicates a deep effect. Some subjects require much longer applications than others.

Experience, however, demonstrates that it is only a question of continuing the application long enough to be able to cut the tooth entirely away, if desired, without sensation by the patient.

So far as yet discovered no after-effects are to be expected, sensibility simply returns to the normal after an undetermined period.

It is my habit in obtunding dentine for a new patient, to test its condition after eight or ten minutes, until I have found the length of application usually needed by the particular subject.

There is time for quoting but two cases from practice.

Case A. Mrs. S., aged thirty-six, very sensitive corono-mesial cavity of medium size in left inferior second bicuspid, a patient such as we all dread, nervous temperament, continually on the verge of nervous prostration, and teeth hypersensitive,—a case that had always left both patient and operator completely exhausted at the end of each sitting at which a cavity had been prepared.

Treatment. Cataphoresis with a twenty per cent. cocain solution, beginning with a current that the patient was unable to feel, and increasing it so gradually as to cause absolutely no discomfort. The actual current passing through the teeth was too small to be recorded on the milliampèremeter at any time.

Result. Complete anesthesia of the dentine, except to one or two of the final strokes of the excavator when shaping the retaining grooves. The patient, instead of following her usual course of going home to bed, went out calling.

The time used in making the application was more than made up in the increased speed that was possible in preparing the cavity.

Case B. Mrs. H., aged thirty-eight, left inferior third molar, exposed pulp in buccal cavity under gum, two days' pain from pulpitis, defective filling in coronal surface. Coronal filling removed, and dentine beneath it found too sensitive to allow cutting.

Treatment. Cataphoresis with thirty per cent. cocain, as described in *Case A*, about same current strength applied for ten minutes.

Result. Entire freedom from sensitiveness to engine bur till the pulp was reached. Cocain was then injected, pulp removed, and canals filled.

In both these cases less than the usual amount of current was used.

For this second patient I have since used, with success, double the quantity of current used in the case quoted.

I might quote many similar cases, but these will suffice as types.

I have but one deduction to draw from my experience with this method, which is, that the universal obtundent for sensitive dentine has been found.

DISCUSSION.

The PRESIDENT. Gentlemen, you have heard this paper. I desire to extend an invitation to all visiting dentists to take part in the discussion.

Dr. WICKS. Mr. President, I wish to call Dr. Gillett's attention to an article published in the report of the twenty-fifth anniversary of the Chicago Dental Society, written by Dr. B. F. McGraw, now of Los Angeles, Cal., and formerly of Minnesota, in which he describes the method of obtunding sensitive dentine very similar to the one just described in the essay.

Dr. Gillett quoted another article of a later date. The paper was read by myself in Dr. McGraw's absence, and I wish to add some testimony of Dr. Gillett in regard to the use of cocain by electro-therapeutics. This solution used by Dr. McGraw was a twelve per cent. solution of cocain in a two per cent. solution of carbolic acid, and the method of application was the same, with the exception that the apparatus was very crude, he using a Mackintosh battery.

I have myself excavated some half-dozen pulps by the method. I have abandoned it for the reason that the apparatus was so crude as to be unsatisfactory, but I think that with the apparatus described by Dr. Gillett we might utilize the idea to a greater extent, although I am afraid the doctor's claim is a little too broad. I have met with many persons of a nervous character who object to the use of electricity in any form, and its use is debarred in such cases.

Dr. T. M. ALLEN, of Birmingham, Ala. Suppose you did not wish to destroy the nerve, what effect does it have,—that is, any deleterious effect or not?

Dr. GILLETT. The statement in the paper covers that question to the effect that, so far as yet ascertained, there are absolutely no ill effects following. Sensibility returns in the dentine. I have in my mouth the first cavity I tested, and I picked that with a knife-blade less than an hour ago to assure myself on that point, and I find that it is in proper condition yet.

While I am on my feet, I will offer my apologies to Dr. McGraw for my lack of knowledge of his essay. This is the first I have heard of it.

In reply to the suggestion of Dr. Wicks as to the fear by nervous patients of the process, I will say that the first case I had was just one of those nervous patients; when I prepared to apply the current I had to rush matters in order to get it in shape before she left the office, but as soon as she was convinced that she was not to be electrocuted, we had no further trouble, and she went away in a more jubilant frame of mind than I ever knew her to be in before.

Dr. WICKS. The point is made by Dr. Gillett of the gradual increase of the current. That was the difficulty I experienced. The apparatus was so crude in my experiment, and the current was increased in such a way, that the increase was distinctly felt. With an apparatus which will carry the current so perfectly, I think many patients may be operated upon who would not submit to the use of cruder apparatus.

The PRESIDENT. If there is no further discussion on the subject, it will be passed.

I have the honor to present to you Dr. Joseph Head, of Philadelphia, who will read a paper.

Dr. HEAD. The title of this paper is rather sweeping. It is called "The Dental Filling," but I hope that before I am through you will find it is narrowed down to some special points that may be of interest.

Dr. HEAD then read the following paper :

THE DENTAL FILLING.

For the last fifty years dentists have declared that a filling must be water-tight, forgetting that the tooth itself is thoroughly pervious to moisture, and also forgetting that many fillings which admittedly leak keep on preserving the tooth-structure indefinitely. Jack has put in soft foil fillings, under water, that have done good service for years. Elliott's observations concerning the universal leakage of amalgam plugs are verified by the daily experience of each dentist, and yet who will say that in spite of leakage amalgam does not save the teeth well?

Drop a fresh tooth, filled with gutta-percha, into aniline ink, and at the end of five minutes the entire cavity under the filling will be stained.

The oxychlorid of zinc and oxyphosphate of zinc are permeable to moisture; nevertheless cement and gutta-percha are indispensable to those operators who would serve the best interests of their patients.

Cohesive gold and tin are claimed by their admirers to be non-leaking materials, but when a tin or cohesive gold filling is first carefully cleansed and then melted, a decided odor of burnt organic material will be perceptible, which would seem to emanate from the interior of the metal. In the light of this fact further proof is necessary before cohesive gold and tin can be said to positively seal the cavity margins. And if they should be proven to absolutely seal such margins, the mere fact that the other materials frequently preserved teeth would be conclusive evidence that leakage of moisture in itself is not a serious objection.

The destructive electro-chemical action of filling-materials on the teeth, once so strongly advocated by Chase, has been proven by Miller to be untrustworthy; and if Miller's experiments had not been so conclusive, the daily dental operations where tin and gold are advantageously combined would of themselves, as years go by, prove the electro-chemical action in the human mouth quite harmless.

That such currents do exist at times no one who has put an amalgam filling in an acid mouth containing gold can for a moment doubt. And it is certainly true that such currents are invariably accompanied by chemical dissolution; but practically no harm results, as an insulatory coat soon forms on the amalgam which effectually puts a stop to any serious corrosion. Instead of saying that an efficient filling should be absolutely water-tight, and should have no electro-chemical action on the teeth, might it not be said that the perfect filling will exclude bacteria from the cavity as thoroughly as would normal enamel,—in fact, that it will exclude them absolutely?

Let us see if we have such a filling-material. Oxychlorid and oxyphosphate of zinc leak bacteria, the proof being as follows: Hollow balls of oxychlorid of zinc and hollow balls of oxyphosphate of zinc were thoroughly sterilized, and then dropped in a solution of bouillon that had been inoculated with a decayed tooth. At the end of five days they were opened. The bouillon had filtered through the substance. The bouillon found within was swarming with bacteria.

Gutta-percha was tested as follows: Several old cuspid teeth of dense structure were drilled through from end to end, the pulp-canal being eradicated. With proper precautions these were sterilized and filled at each end with gutta-percha, a small pellet of cotton soaked in sterilized bouillon being left inside. These were subjected to steam heat for an hour, five separate times, an interval of a day elapsing between each heating. They were then placed in tainted bouillon. At the end of five days they were examined, and the cotton soaked by broth was found to contain cocci, diplococci, streptococci, and staphylococci. The reports of these two experiments are given at full length in the June number of the *International Dental Journal.* The gutta-percha test is not conclusive, as Miller has shown that bacteria may very occasionally penetrate the normal dentinal tubules; but at least the experiment would seem to indicate that gutta-percha could not keep them out, which is the real point at issue.

That valid amalgam fillings at times leak bacteria as well as moisture, no experienced practitioner will deny.

Tin and cohesive gold are the only materials that may exclude bacteria. That they do exclude them is yet to be proved. Soft-foil fillings have been picked out from cavities by the explorer in a pulpy, evil-smelling state, to all appearances full of bacteria, and yet the dentine beneath has been found firm and sound.

It is a most astonishing fact that soft-foil fillings may be soft and mushy without the least harm to the protected cavity; while, if cohesive-foil fillings are soft or defective on the edge, decay almost invariably sets in. Miller claims that soft foil has a slightly antiseptic action, which is lost in annealing. It might be said that a not too dense filling would be less likely to dangerously expand or contract under the action of cold or hot drinks. But these explanations do not seem sufficient. The questions raised by these facts cannot as yet be satisfactorily answered, and I hope some experiments on this subject, which are now in process, will give more positive light.

How is it that fillings can leak bacteria and still preserve the teeth? The fundamental principles of dentistry would seem to be shaken and antisepsis set at naught did we not remember that the quantity of bacteria, and the presence or absence of a suitable culture, is a most important factor in the process of decay.

Every man in a state of health, passing through the city, may safely inhale a limited number of smallpox germs, as the tissues and white blood-corpuscles will destroy them.

If, however, he works in a hospital, or wears the clothing of a smallpox patient, the number of germs taken into the body overcomes the hygienic police force, and the man falls sick. The same principle applies to tooth-fillings. The tooth can resist the onslaught of a few bacteria, and, it would seem, destroy them, as is shown in the case of mummified black decay. Moreover, many bacteria need the presence of air, and all need a constant supply of food. The fillings tend to exclude both of these essentials for bacteriological propagation.

In spite of the fact that a useful filling may leak micro-organisms, there should be no pains spared to adapt each plug as accurately as possible. The more perfectly a filling excludes bacteria from a sterilized cavity, the more certain the chances of permanent success.

And after all has been said against filling-materials and defective conditions of the saliva, it seems probable that the great majority of our failures arise either from hasty preparation of the cavity or unskillful manipulation.

In my opinion, a gold filling, either of soft or cohesive foil, if it has perfect adaptation to good enamel-edges, will preserve the tooth as absolutely as if the original enamel remained dense and undecalcified. A filling at best can only restore the tooth to its original condition of perfection, and if the acid and bacteria, which originally created decay, should attack it again, there is no reason why the tooth-substance should not disintegrate a second time. This is an unanswerable excuse and may convince the patient many times, but if decay recur too often in the same place, the coincidence is most unfortunate for the dentist.

I am well aware, from my varied experience in dental meetings, that there are numerous practitioners who always do absolutely perfect work; whose hands never tremble from fatigue at the end of a long day; whose weary eyes never by any possibility overlook small concealed portions of decay that ought to be removed. These practitioners will not need the suggestion I am going to make, because when no fault can exist no precaution is necessary. But to that large and most useful class of dentists who, in spite of a personal element of error, engage to relieve pain, preserve teeth, and make mouths wholesome,—to them I would say: After the gold filling, approximal or crown, is inserted to the best of their ability, let them polish it down almost flush with the enamel-edges, and rub in thoroughly a mush of amalgam. When the patient returns, they can polish all the amalgam off and finish the filling, which will look untarnished and resemble any ordinary filling except in one particular. Should decay attack its borders, the conscience of the dentist may be quite clear. Should it be feared that the enamel may have been powdered by injudicious malleting, scrape the edges well with an explorer and syringe with pure water before applying the amalgam.

Of course the amalgam that fills up any small fissure will shrink, while hot and cold drinks may cause the gold to expand and contract from the cavity walls. But objections to gold fillings are now out of date. Gold for upward of fifty years has prevented decay. The teeth can successfully antagonize a small number of bacteria, and it is my opinion and my experience that the edges of a gold filling, guarded with amalgam as described, will successfully prohibit the dangerous entrance of micro-organisms.

DISCUSSION.

Dr. L. Ashley Faught. I would like to ask a question of my friend, as to whether the claim is that the rubbing in of the amalgam or the gold filling, by its more perfect mechanical contact, preserves the tooth from decay, or whether it is not that the addition of the alloy of the gold prevents the electrical current and the chemical disintegration resulting.

Dr. HEAD. The question is not very difficult to answer, for this reason : Personally, I use it for mechanical purposes so that it will be perfect ; but if you create the means you have, the current and the disintegration may go on theoretically, but not in fact.

Dr. FRANK ABBOTT, of New York. I hardly think it is fair for me to say anything upon this paper, although I am a little surprised at the result of the experiments quoted in it. I am surprised that anything in the way of bacteria can possibly come in contact with the teeth under any circumstances without destroying them.

I have been led to believe by experimenters that nothing in the way of bacteria can come in contact with teeth without injuring them, and that even so far as the sound dentine is concerned it is likely to be disintegrated by these organisms.

This paper states absolutely that they may be present without doing any harm.

Now, what is necessary to be present in order to destroy a tooth? You must have acid. A tooth itself is composed principally of alkaline substances, and acid has an affinity for it. You cannot destroy it without the presence of acids. I don't care whether you get it from bacteria, or from muriatic or sulfuric acid. That makes no difference. One perhaps will work more rapidly than another, but in my judgment it is a fact that bacteria play a very small and very unimportant part in the destruction of teeth. We have had this thing driven down our throats, and we have had to swallow it, or some of us have tried to, and I have tried very hard, and they have gotten it down so far that they could not get it down any farther. There must be something besides organisms to produce this result, or it could not be done, and I hope to be able to show you something aside from organisms in this respect further than I have done heretofore before I get through with it, and to show you that there is a disturbance going on in teeth that bacteria have nothing to do with at all, except possibly the part they play in the production of acids, which I do not believe is anything like the amount that is claimed for them by some gentlemen in the profession. (Applause.)

This idea that our teeth are being destroyed, and that we are being destroyed generally by the action of micro-organisms, is a very pretty one ; it is a very simple matter for us to see an instance ;

it is easy by the microscope to see the organisms, and believe that they are the destroyers of human beings, and communicate disease from one person to another, and are always present and ready to take hold where there is any possible chance; but there must be a lesion present before they can do any work, and that means they have an opportunity of feeding to their advantage on the part where the disease has taken hold. It is the same thing exactly in a tooth. The enamel of a tooth is never interfered with by organisms; but that is simply the action of a substance that has affinity for it as water has for sugar. It dissolves it away, and then there is a cavity containing matter which will be found to be very strongly acid. You may produce that acid by the action of organisms, or any other way. There are many ways in which acids are produced in the mouth without the presence of organisms, and the result is the same,—a destruction of the enamel of the tooth by the action of acids. You come to the dentine—what have you then? We will proceed further hereafter.

Dr. HEAD. I would like to ask Dr. Abbott if he thinks decay can take place entirely from acid alone without the action of bacteria.

Dr. ABBOTT. As an evidence that it can I will refer the gentleman to any person living in a malarial district who is constantly taking liquid applications of quinine or iron. You will find thousands of holes eaten into the teeth probably without the presence of any bacteria whatever.

Dr. HEAD. Can you make decay in the teeth without acid?

Dr. ABBOTT. Yes, you can dissolve it all to pieces.

Dr. HEAD. Can you do what Miller can do?

Dr. ABBOTT. He never has been able to produce that pigmentation of the teeth.

Dr. HEAD. He has made slides that have deceived everybody.

Dr. ABBOTT. Yes, and probably meant to.

Dr. HEAD. Can acid dissolve amalgam?

Dr. ABBOTT. I think not. The result is produced by death and putrefaction.

Dr. HEAD. How does putrefaction take place without the action of bacteria? What is putrefaction?

Dr. ABBOTT. It may break away. Putrefaction is the destruction of tissue by organisms.

Dr. HEAD. I thought you said this took place by putrefaction?

Dr. ABBOTT. Yes.

Dr. HEAD. Then it is by micro-organisms after all?

Dr. ABBOTT. Possibly.

Dr. HEAD. Then no decay can take place in the death except by the action of micro-organisms?

Dr. ABBOTT. Yes. But it may be taken away in more ways than one; for instance by friction.

Dr. HEAD. But in the middle of a tooth, where there is a small hole in the tooth and where no friction can take place, is that done by bacteria or is it not?

Dr. ABBOTT. Possibly they have lived upon it and have destroyed it.

Dr. HEAD. And it is impossible to do it in any other way?

Dr. ABBOTT. I would not like to say it is impossible.

Dr. HEAD. Have you done it?

Dr. ABBOTT. I have seen a great many cases of that kind.

Dr. HEAD. Have you seen that thing done?

Dr. ABBOTT. No.

Dr. HEAD. I know Miller has tried it in every way, and his slides deceive the best micro-experts. He showed them the magnified decay, and they could not tell the one from the other.

Dr. ABBOTT. Well, I never have seen the slides of Miller or anybody else yet when anything in the way of pigmentation of the teeth has been produced. I never have seen that, but we find it in the process that goes on naturally in the mouth, and I don't believe that Miller or any other man can produce it.

Dr. HEAD. But I think you have just yourself confessed that amalgam can only be taken away from the inside of the teeth by putrefaction.

Dr. ABBOTT. Now I am talking about the brown stain on the teeth.

Dr. HEAD. I am talking of decay.

Dr. ABBOTT. You were talking a few minutes ago about the stain.

Dr. HEAD. I beg your pardon. I was talking of decay. I said the teeth could not decay. I never spoke of stain.

Dr. ABBOTT. Well, it is very curious. I thought you spoke of discoloration.

Dr. HEAD. Decay usually is discolored.

Dr. ABBOTT. But sometimes not very much so.

Dr. HEAD. I never saw decay without discoloration. Did you yourself ever see decay with a normal color?

Dr. Abbott. I have seen it very near it.

Dr. Head. Never absolutely?

Dr. Abbott. Not absolutely; no.

Dr. Head. Then it is discolored?

Dr. Abbott. Yes; it is not white and some of it is black, very considerable of it is black; how does that black get there?

Dr. Head. Now, you say that no micro-organisms can attack enamel. We have all noticed that there is such a thing as green-stain on children's teeth. I do not say whether it is vegetable or animal, but it is well known, and every one of us know of it, and you can brush it off, and underneath there is a white decalcification which could only be caused by some acid, and it is almost beyond a doubt proven that those micro-organisms do produce acid which decalcifies the tooth. I do not say the mucous membrane may not give rise to lactic acid and in that way decalcify the teeth, but I do say that the researches of Miller will have to be disproved before you can possibly say that bacteria do not cause decay of the teeth; and that Miller's work is not work that can be brushed aside lightly, and the statement made that decay is caused by acid, unless you can do as Miller has done, unless you can first take a tooth and cause your decay by acid; and that has never been done, although it has been tried for years.

Dr. Twilley. Mr. President and Gentlemen: In the clash of the swords of Damascus, sparks of light must fly; in the clash of intellects to-night must wisdom lie. It looks to me and is to my mind clear, and it is but what I have studied from youth, that we have been more clearly brought to that point, that it is wisdom at all times to use that material which is best adapted to the case in hand. While I am not prepared to make my offer this evening, I hope at an early day to produce good authority which will enable me to say that the tartar upon the teeth is a by-product of bacteria.

Dr. Head. May I ask you a question?

Dr. Twilley. Excuse me. Not just now. I do not desire to enter upon a dialogue with you just at this present moment.

If tartar is a by-product of bacteria, then, as Dr. Head has said, the after-result of the removal of the green-stain is the soft enamel which we find beneath it. If that is the result, how does it produce the condition of teeth that we find?

I am quite glad to hear, and it pleases me to find, that while we all agree that gold is not a germicide, it is a good preservative. We all agree upon a combination of gold and tin foil, but nitrate of silver mixed with oxyphosphate is one of the best preventives known that can be used in the mouths of children.

The doctor certainly does hold up the light to us all in that expression where he says, "Use that material which is best adapted to the case in hand."

Dr. HEAD. I should like to ask you, concerning that paper, about which of course I must not ask too much beforehand, whether the tartar is supposed to be a coral formation.

Dr. TWILLEY. It is supposed to be a by-product.

Dr. HEAD. Bacteria in one instance might disintegrate and in the other fill up. It is very much like the difference between a gang of Irishmen and a gang of Italians: one might be on your side and the other against you; one might put you up and another knock you down.

Dr. TWILLEY. Being a Scotchman, I should destroy my enemy and hold my friend closer to me.

Dr. HEAD. There are different kinds of bacteria. There are bacteria which, in doing their work, disintegrate the teeth, and other bacteria which, in doing their work, may build up the teeth. However, I am very glad to know that tartar is caused by bacteria.

Dr. SANGER. Mr. President and Gentlemen: Before we pass to the next paper, I desire to announce that at the clinics to-morrow afternoon Dr. Gillett wishes to prove the truth of his paper by obtunding sensitive dentine, and would like, if possible, to have some dentist as patient, because he is desirous of having reliable evidence, and feels that no one could be as reliable as a dentist; so that if there is any gentleman here who is willing to submit himself to the—I was going to say "ordeal,"—but I will say the pleasure of having the dentine obtunded by Dr. Gillett, I will ask him to kindly report to me.

Dr. HEAD. Is the tooth to be filled, or only the dentine obtunded?

Dr. SANGER. It is to be obtunded, and we will also furnish a reliable operator to put in any manner of filling the gentleman submitting himself will elect to have.

The PRESIDENT. I have the very great pleasure, gentlemen, of introducing to you Dr. Geo. Howe Winkler, of New York city, who will read a paper entitled "The Medicinal Prevention of Dental Caries."

Dr. WINKLER. Before reading my paper, I desire to thank Dr. Abbott for the very interesting preface that he furnished for it in the remarks that he made.

Dr. Winkler then read his essay, as follows :

MEDICINAL PREVENTION OF DENTAL CARIES.

Dental caries, or the decay of teeth, is due to a morbid state of the system—a dyscrasia,—and can be prevented by intelligent medicinal treatment just as certainly, and equally as often, as the exhibitions of other dyscrasias can be ameliorated or arrested by proper remedies.

The theory of Professor Miller, of Berlin, that dental decay is due to an acid destruction of the lime-salts of the teeth, produced or furthered by the agency of micro-organisms which secrete lactic acid, is generally accepted. The importance of the micro-organisms in their destructive ability, however, is a question with some members of the profession. My conclusion, after a careful perusal of Professor Miller's very instructive and able article, in Litch's "American System of Dentistry," was that micro-organisms were a secondary factor in tooth-destruction, and that conclusion has been maintained and strengthened both by the result of clinical observation in the mouth, as well as by the success I meet in the medicinal treatment of patients for the prevention of decay.

Every dentist has observed in some mouths a snow-white line on the enamel of teeth along the gingival borders of the gums on both labial and buccal surfaces, where neither softening nor decalcification had yet occurred, and where, especially on the incisors, no lodgment of micro-organisms had been maintained. That is the first decolorization due to the action of acid on the translucent enamel, and that acid is an elimination from the mucous glands of the gingival borders, and is the positive evidence of a morbid systemic condition.

Micro-organisms exist in all mouths regardless of the absence or presence of decay, and while malformation or deep sulci in some teeth might afford them a sufficiently long and uninterrupted lodgment to originate caries at those points, in the vast majority of cases an acid disintegration of the enamel first occurs, and the micro-organisms burrowing into the softened mass take possession and continue the work of destruction.

An acid, then, in my opinion, is the *primary cause* of decay. Not an acid that may have been taken into the mouth as food or medicine, nor one that may be the product of decomposition of particles of food that have lodged about the teeth, because in either case these acids are too much diluted and too quickly washed away by the fluids of the mouth to be deleterious, but an acid which is *excreted*, not *secreted*, by the mucous glands of the mouth ; an elimination by these glands of some unhealthy systemic condition, an acid which is the positive evidence of a morbid state,—a dyscrasia. This specific morbid state, or dyscrasia, is just as amenable to medicinal treatment as are those morbid states resulting in a diseased condition of the liver, or kidneys, or the gastric glands of the stomach, and, like all other dyscrasias, must be treated by medicines internally administered.

Local treatment and topical applications are just about as efficacious for the cure of diseased mucous glands as the painting of iodin over the site of the liver would prove efficient in a diseased condition of that organ, or as the application of a porous plaster to the small of the back might prove curative in diabetes mellitus.

The dyscrasia which results in caries of the teeth is a hereditary transmission, generally of innocent origin. It is the natural sequence of the mistakes, the over-indulgences, the wear and tear and strain of civilization ; it is a part of the price that nature pays for the theories, the practices, and the privileges of modern life. To quote from a paper I delivered last November before the Homeopathic Society of New York, and published in the *Dental Cosmos* of January, 1895, entitled "A Pathological Condition of the Mucous Glands of the Mouth," this dyscrasia "is non-syphilitic ; it is not due to a want of cleanliness, it is almost universal. The number of persons affected by it is increasing. In the vast majority of cases it exists in patients who could by no possibility have acquired it during their own lives, either through disease, salivation, or other provocative causes." It evidences its existence in each individual at intervals, not periodic, but at intervals of longer or shorter duration ; and while it exists at all stages of life, it seems most frequent and particularly destructive in youth, and at the approach of puberty, the young person presenting generally a splendid physical development and an otherwise robust state of health.

The evidences of the dyscrasia which results primarily in caries are generally quite conspicuous, and consist in a loss of neatness of the gingival borders and interproximate spaces, broken down or swollen margins, inflammation ranging in color from turgid to bright red, and in condition from simple to phagedenic, and sometimes a pronounced stomatitis involving the entire mucous membrane of the mouth. The teeth are often covered with a tenacious, slimy mucus, which, if scraped off and smeared on blue litmus paper, will in many instances cause the pink color of acid reaction to beam into view; the destruction of tooth-substance, when the dyscrasia is active, ranging in extent from a few simple cavities to an apparent melting away of the entire dental equipment.

So much for a concise and simple statement of the theory.

The treatment of this dyscrasia is extremely simple, and at the same time marvelously efficacious. I think that on an estimate I can claim as the most modest limit at least fifty per cent. of dental caries is absolutely preventable.

I regard local treatment and hygienic care of the teeth, *for prevention of decay*, as almost utterly useless, and depend entirely on internal medication to reach, arrest, or cure the dyscrasia when I meet it. The mucous glands, during the active stage of the dyscrasia, excrete their acid eliminations continually, and the hours between the periods of cleaning, and the long hours of the night, afford ample opportunity to these corrosive exudations to work out their destructive results.

In justice to myself I desire to explain the liberal system which I hold in medication.

My dental diploma was conferred by the Baltimore Dental College, and my medical diploma I received when I graduated from the Medical Department of the University of Georgia; and while I hold fast to *all the good* that allopathy places within my reach, I am liberal enough to accept, and be grateful to, homeopathy for some remedies which it has given me, and I treat the diseases of the mouth eclectically, using such remedies in each case as my judgment warrants.

In the case of simple acid excretions, I find the homeopathic preparation of kreosotum an almost perfect specific; the twelfth decimal, or 12x, is the potency I prefer; a lower potency frequently produces a laxative result which is undesirable. I desire to emphasize the fact that I never prescribe internally, kreosote in the mother tincture or pure form for any condition whatever.

I administer kreosotum in three ways, according to my patient. Three or four powders of the 12x, each containing about as much as would rest on a dime, are given at night between the last meal and bedtime, at thirty minutes apart, and two powders in the morning before breakfast, one immediately on the patient's rising and the other in twenty or thirty minutes. In place of powders I sometimes give a dram vial of the kreosotum, 12x in liquid preparation, prescribing one or two drops in water in the same number of doses and at similar intervals as the powders; or I prescribe the remedy to a great many persons, especially children, in the form of pellets. I take a four-dram vial of pure sugar disks, and moisten them with liquid kreosotum 12x, and prescribe one or two every hour during the waking hours. I advise waiting half an hour after meals, where coffee or wine has been taken, or after smoking. I never diet a patient, because *I never saw one* who would stick to a regime unless the dyscrasia which was being treated was accompanied by great pain or distress. I keep the kreosotum treatment up from forty-eight hours to three or four weeks, as each case may demand.

The above minute account of how I prescribe kreosotum has been deemed justifiable, because in the last paper I wrote, in which the value of that preparation was extolled, I omitted the details of its administration, and received a number of letters from gentlemen in the profession asking for further information in its use.

When I discover in a patient's mouth, in addition to the acid excretions, a pronounced gingivitis or stomatitis, simple or ulcerative, my procedure is quite different. In Hare's "Therapeutics," vol. ii, Dr. A. D. Blackader (article on diseases of the mouth) recommends chlorate of potassium in stomatitis; and in ulcerative stomatitis claims that it is almost a perfect specific, using it both as a gargle and in tremendous doses internally. He writes, "We do not only secure a local action by their use in these ways, but also a secondary action by the elimination of the drug through the salivary glands. Potassium chlorate when taken internally appears in the saliva in five or ten minutes, and continues to be secreted for some hours. In this way we obtain a secondary topical effect much to be desired, because less irritating and more continuous. The quantity administered during the whole period of the twenty-four hours to an adult should never exceed one or one and one-half drams, and to a child of three years twenty or thirty grains. It is best given in small doses repeated every two or three hours." He cautions watchfulness on the part of the nurse or attendant, and an instant cessation of the drug on the first signs of danger.

I must confess it is incomprehensible to me how a gentleman of such fine attainments and high ability as Dr. Blackader possesses can place such value on a drug so poisonous as potassium chlorate, and can administer it in such large and dangerous doses, when in his own estimation its chief value, if not its only real merit, lies in the fact that it is a good gargle. He seriously endangers the kidneys, if not life itself, for the purpose of securing a topical application.

I sometimes prescribe that drug internally in small doses, but prefer in these cases the iodid of potassium; or if I desire to obtain the alterative action of iodin in a more delicate and easily digestible form, I give syrup of hydriodic acid. I prescribe the following formulas:

℞—Iodid. potassium, gr. 200;
Syr. sarsaparilla co., ℥ iii;
Tinct. gentian. co., ℥ ii;
Aquæ, q.s. ad. ℥ vi.
Sig.—One teaspoonful after each meal.

That formula gives a little over four grains of the iodid of potassium at each dose for a period of sixteen days.

℞—Iodid. potassium, gr. 100;
Syr. sarsaparilla co., ℥ iii;
Tinct. gentian. co., ℥ ii;
Aquæ, q.s. ad. ℥ vi.
Sig.—One-half teaspoonful as directed.

The directions given to the patient are, one dose after each meal and one dose between meals, the last being taken at bedtime. That formula gives a little over six grains per day; and while the entire quantity is very small, the oft-repeated doses are very effective.

The syrup of hydriodic acid I prescribe in doses of from twenty drops to a child, up to a dessert-spoonful to an adult, three times a day after meals. The iodin in this preparation being very much more active than in the iodid of potassium, care should be exercised and small doses preferred. After the iodin treatment I then prescribe kreosotum as above, and keep it up as long as the case may require it, generally from one to four or five weeks.

As local aids in the form of gargles or mouth-washes, I prescribe:

℞—Potassium chlorate, ʒ ii;
Aquæ, ℥ iv.
Sig.—Gargle.

or

℞—Carbolic acid (cryst.), gtt. 10–15;
Glycerol, ℥ i;
Rose-water, q.s. ad. ℥ iv.
Sig.—Mouth-wash.

or

℞—Borolyptol.
(Directions on bottle.)

all of which, except the first, are pleasant as well as stimulant and detergent.

After the above treatment has relieved my patients, I require them to let me examine the mouth about every three months, and I renew the treatment from time to time as seems necessary.

In the case of persons wearing rubber plates, I advise immediately a change to gold. Rubber plates hold the excretions *in situ* and the heat of rubber promotes and accelerates fermentation, adding tremendously to the excoriating action of the exudations.

All local applications have their value in the treatment of diseased conditions in the mouth, and all hygienic methods such as cleansing the teeth, removing tartar, readjusting or replacing improperly selected or imperfectly adjusted appliances, are necessary, but their value lies in the fact that they are adjuncts or aids only to the systemic treatment which is *necessary to the cure* of the diseases we find in the mouth.

The number of fillings required by patients, especially the young, after having undergone the above treatment, are very few in number. The arrest of decay, or a tendency to it, is marvelously pronounced.

I have one little patient who suffered from the ravages of decay to the extent of thirty-three cavities in the course of five months. I then treated her systemically, and in eighteen months she had but four small decays, and they occurred during an absence of five months from my observation and care. While she was with me, and taking from time to time small quantities of kreosotum as I directed, she was absolutely free from caries.

In conclusion, I maintain that dental caries in nearly all cases is the result of a morbid systemic condition ; it is the evidence of a dyscrasia, and it is amenable to medicinal treatment as are other dyscrasias. I trust my contention has been sufficiently strong and convincing to induce an adoption of my practice in this direction. I promise you the results will be more than gratifying.

Systemic medication in dentistry has come to stay, and opens up a field of immense value and interest. Its pathways are bordered by the flowers of hope and reward, and lead the faithful to that high and dignified plane of professional life,—a specialty of medicine.

DISCUSSION.

The President. I should like to call on Dr. Barrett to open the discussion on this paper.

Dr. Barrett. Mr. President and Gentlemen: I hardly know how to commence an argument, because I have not yet found the common ground upon which we can meet. This remark applies especially to the last paper. I should differ from the writer of it very radically in many of the basis principles that have been enunciated, but we would not meet on the same common ground, and hence there could really be no actual argument between us.

That caries is indication of a dyscrasia, no man of course will for a moment dispute, but that it is necessarily an indication of a general constitutional disturbance, I am not willing to admit.

The subject of bacteria has been made prominent in the papers and in the discussion this evening. I suppose that in the course of a few years to come we shall become more learned on this matter, but at present our ideas are extremely crude, especially some of those that have been enunciated to-night, as it seems to me from my standpoint. Very many look upon bacteria as rapacious animals (or vegetables), that are going about like a roaring lion, seeking what they may devour. That is not my conception of bacteria; I have nothing in common with that belief. They attack nothing; they are not rapacious. My idea of bacteria is that they do not make any attack whatever upon individuals, any more than a potato makes an attack upon the soil. You might as well say that the potato attacks the soil; it does nothing of the kind. If you plant a potato in vegetable mold, it will decompose that mold, take out of it whatever is necessary for its own growth, for its organization; decompose the salts that are found in the earth, decompose the inorganic matter even that is found in the earth, and will leave behind it certain other elements which may, of themselves, enter into new combinations, and both may be called by-products. That is precisely what bacteria are doing, especially in the mouth. The bacteria of the mouth are nothing more than vegetable organisms which grow in the proper medium and decompose that material, taking out that which will be built into their own organisms, and leaving behind certain other elements for forming new combinations. With every different organism, every different bacterium, you have a different by-product; you have the taking off of different elements. It may be one that will decompose the sugars, taking out certain elements and leaving behind that which was discovered by Miller, the discovery which seems to have solved the problems which have been before us so long as to what may be the by-product which is left. He found in certain cases that it was an acid ; that acid decomposes the lime-salts of the teeth, and destroys them precisely as if it were any other acid, but the difference between acids formed by micro-organisms and the other acids that may, under certain conditions, be present in the mouth is this : The other acids are seldom, if ever, found in such strength as will be sufficient for the decomposition of the lime-salts of the teeth. It is just as simple, it seems to me, as A, B, C.

A reference has been made here to the decomposed matter that is found in the borders of the teeth. That is simply the white cheesy deposit that Miller discovered, and he has called our attention to it and analyzed it and shown precisely what it is. It is decomposed food ; it is not a decomposed tooth at all, neither will it decompose the tooth. The artificial caries that Miller has produced is absolutely indistinguishable from the ordinary caries. I have a considerable number of the slides, and I challenge any man, be he chemist, bacteriologist, or whatsoever he may be, to distinguish the one from the other and tell which is the natural and which the artificial. It is absolutely impossible to do it, hence we must consider that the bacteria are the main causes of that which we call caries.

I have great faith in internal medication. I do not believe, however, that the administration of internal remedies will in all cases overcome or neutralize local disturbances, and caries of the teeth is very frequently a local disturbance. The acid brings it about, for I can conceive that a solution of the lime-salts of the teeth may be made by a mineral acid, but the mineral acid does not produce caries,—that is not caries, as the essayist has stated.

I want to emphasize one point : that bacteria are not ravaging animals. They make no attacks upon teeth. They simply grow as any other vegetable grows, and leave behind certain elements forming new combinations. Those combinations may be noxious or beneficial ; it depends on the character of the bacteria and the products.

I understand the statement was made here that tartar is a by-product of a bacterial formation. We know whence the ordinary tartar comes, and so far as we know it has no connection whatever with bacteria ; and so far as it being a by-product is concerned, I do not see how that can be possible, because it has lime as its basis, and bacteria do not produce lime in any way that I know of.

I am sorry I cannot say anything which bears more directly on the paper. I simply want to throw out this idea that we must consider bacteria not from the standpoint of rapacious animals or vegetables that are preying upon the teeth, trying to bore a hole in the tooth. This they never do; but when they find a lodgment they may produce an acid, and the acid may devour the tooth.

Dr. ABBOTT. Either Dr. Barrett has misunderstood the last paper, or else I did. The intention of the last paper, as I understood it, was to call attention to a white circle around the tooth often seen near the gums of the molars, bicuspids, and incisors; a little white line that is seen, and which shows that there has been a certain amount of disintegration of the enamel itself, shows that the enamel itself has been affected,—affected to such an extent that it is, you might say, demoralized; the lime-salts have been displaced to such an extent that you see some of them, and they show more of the white appearance than they do in the normal state. That is due to the presence of the cheesy substance Dr. Barrett spoke of, to which Dr. Miller calls attention. That has remained there sufficiently long to produce fermentation; that fermentation has produced an acid; that may be due to bacteria again, and the acid has affected the lime-salts in the enamel. It is simply a presage to the breaking-down of the enamel of that tooth and the making of a cavity in it. That is what the essayist meant to illustrate in his paper, as I understand it. The point is, how is that brought about? I should object to the position taken by the writer of the paper, solely from the fact that in all these cases, either at one time or another, you will notice that the patients have neglected their teeth: they have not kept them clean. Any person who keeps the teeth clean from the time they come into the mouth until they are taken out, I will guarantee will never have any white lines of this description upon the enamel. It is simply the acid produced by decomposition of particles of food that remain there; whether the acid is intensified by any excretion from the gums or not, of course I do not say. (Loud applause.)

The PRESIDENT. Are there any other gentlemen who would like to make any remarks? All have the privilege of the floor.

Dr. BARRETT. I simply desire to say that I am much obliged to Dr. Abbott for thoroughly sustaining that which I said; he simply repeated it in another form, and I quite agree with him.

Dr. WINKLER. Mr. President and Gentlemen: I think Dr. Barrett has my paper and the one read previously somewhat mixed.

The mucous glands of the mouth are like all other glands in the human body, in that they have the property of performing their functions. They have a predilection for certain administered drugs, and they also have the power of elimination. I attribute destruction of the teeth to that dyscrasia which results in the elimination of these minute glands of certain acids. Dr. Black, in an article in the May *Dental Cosmos*, speaking of the activity of bacteria, seems to have taken the ground that bacteria are primary and powerful factors of dental decay. I regard them as secondary factors, and I think nothing of them as agents of destruction about the teeth as far as the beginning of that destruction is concerned. If they get into a cavity they undoubtedly operate there to a considerable extent.

What I am concerned in preventing is the first decay; if that is prevented, bacteria do not destroy the teeth. Dr. Black claims there must be some condition in the saliva which prevents the growth and destructive activity of micro-organisms,—a "defensive proteid," which, when decreased in quality or strength from systemic causes, ceases to restrain or destroy the organisms, and they commence their destructive activity, and their decrease of the defensive proteids evidences a dyscrasia as truly as gout or rheumatism.

Probably many of you have read his extremely interesting and able articles. These abnormal acid eliminations from the mucous glands, just like the long-continued elimination of potassium chlorate for instance through the salivary glands, injures and breaks down the glands, and is a positive menace to the health of the patient; and in order to reach that disease and stop it, so as to save those glands and restore them to their normal condition of health and function, I give the medicines internally which these glands have a predilection for, just as a physician treating the liver might give calomel or might, in some cases, administer sweet spirits of nitre for the kidneys. Some drug that has a specific action upon the gland to be treated must be administered into the stomach, and I administer such as I know will have the proper effect upon the glands that I am called upon by my patients to treat. When these glands are in a state of disease and are excreting abnormal acids, they put the mouth in a perfectly acid condition and make an incubator of it for micro-organisms, and bring about all the most favorable conditions for the production of electro-chemical relations. Now, the cleaning of teeth has been spoken of. But there is nobody on God's earth who can clean the teeth and keep them clean, when oozing from these little glands is one continuous stream of tenacious, slimy, excoriating, and corrosive mucus. The acid is not a strong acid, it will not cut the teeth off as nitric acid might, but it is there all the time, waking and sleeping, during the long hours of the day and the longer hours of the night, doing its work.

It is not necessary to have a mineral acid to destroy teeth; very many acids will do that if the teeth are subjected to their action for a long time. I think Dr. Abbott has my idea very fairly, with this slight difference. I have seen the white line of decolorization mentioned on front teeth, where the cleaning of the teeth was possibly sufficiently continued, accurate, and careful to have kept off the mucus. I thank him for his remarks. I will ask you when you see an inflamed and broken-down condition of the margins of the gums around the molar teeth to take a little mucus from the inside of each of the four first permanent molars and smear it on litmus paper, and almost immediately you will find that the pink reaction occurs. I have done that again and again, and have almost invariably obtained the pink color of acid reaction. I have seen teeth that were covered with slime as tenacious as glue, corroded and jagged with cavities, the edges of which so fragile that you could crumble them with your finger-nail, the teeth seeming almost as rotten as rotten stone and literally melting out of the child's jaws, restored in a few months' time by internal medication to a perfectly clean condition without a speck of mucus on them; not that the child cleaned them, for she did not, but because the exudations from the glands had been arrested by the glands being restored to health. I wish to emphasize the fact that I do not count bacteria at all as a cause of decay.

I did not expatiate upon my theory in the paper offered as liberally as I might have done, for the simple reason that I was extremely anxious, without occupying too much time, to elaborate carefully my method of treatment in the hope that it might be adopted. I know it will give you a great deal of satisfaction if you try it, and it is something that will do a vast amount of good. We have all been annoyed and baffled by acid excretions in the mouths of some of our patients where we have exhausted our efforts to arrest them; my determination to overcome the difficulty led me to the discovery that infinitely small doses of kreosotum, homeopathically prepared, was a positive specific for it. I could not do anything here with allopathic remedies, and took to the study of homeopathy in diseases of the mouth, and I have several remedies from that source beside kreosotum that I use very satisfactorily. Kreosotum has proved of the greatest value to me and to my patients. I am not advocating homeopathy, but I thank it for that remedy.

The paper was then passed.

On motion, adjourned until 10 o'clock A.M., Friday, August 2.

SECOND DAY—MORNING SESSION.

President Holbrook called the meeting to order, and the Secretary called the roll.

The **PRESIDENT.** I now have much pleasure in introducing to you Dr. Richard C. Newton, of Montclair, New Jersey, who will read a paper upon, "What shall be Done for the Teeth of the Poor?"

Dr. **NEWTON.** I consider it personally a great honor to be invited to address this Society for the third time. When my friend Dr. Watkins asked me if I would read a paper at this meeting of the Society, I told him that I thought I was about read out and the Society had heard enough of me, but he replied in the negative, so I told him that if he would allow me to read a very short paper, not requiring any special research on my part, I would be glad to do so, because of the very kindly feeling that I have for this Society and because of the kind treatment I have always received at its hands.

The few words that I am going to address to you lead up, it seems to me, to a very important matter in dentistry, and I hope it will bring out a discussion which will cover the shortcomings of the paper, which has been somewhat hurriedly written, owing to lack of time. I have tried, however, to emphasize the important points, and I understand there are gentlemen here some of whom agree and others of whom disagree with my view of the subject, and will state freely their minds in this matter. It is a subject which must be taken into careful consideration, and I trust, as I said, that the discussion will be frank and full. Whatever I may say in my paper I have said from an honest heart, because I believe it truly, and I believe that whatever decision you arrive at will be of the same character,—that is, you will honestly consider the question and give your adherence to whatever side seems to you to be right.

WHAT SHALL BE DONE FOR THE TEETH OF THE POOR?

To the writer, at least, the above question is an exceedingly puzzling one, and it is chiefly in the hope that the gentlemen present, who have doubtless puzzled over the question as much as I have, will be able to throw some light upon it, that I have been led to address you quite briefly upon it to-day. I think that we need not take up much time in considering the importance of the question. Perhaps, however, there may be some who do not yet appreciate the value of the teeth in the human economy. The teeth are at once the indication of sound health and the conservators of it. An edentulous person may "gum it" for a number of years and enjoy a fair degree of health, but I say without hesitation that, as a rule, poor teeth indicate poor digestion and malassimilation of food, which is the foundation of a superstructure of disease ; and the rule just enunciated is quite strong enough to bear the exceptions, and the persons who can remain in tolerable health in spite of bad teeth or no teeth for any considerable length of time are, in my experience at least, very few in numbers.

Admitting, then, that the teeth are at once the indicators of good health and the conservers of the same, that no one can remain healthy for a considerable period of time without good teeth either natural or artificial, what are we going to do to preserve the teeth of the poor, or to induce this class to preserve their own teeth? Among the well-to-do the frequent warnings of the family physician, but more especially the dictates of fashion, which have ordained it to be the worst of bad form to have bad teeth, drive nearly every one to the dentist as soon as his teeth begin to decay. How shall the poor be induced to follow a like course? How shall they be taught the necessity of consulting a dentist early enough to prevent decay and anticipate the destruction of the teeth? I confess that this is to me a very difficult problem ; probably much light can be thrown upon it by the discussion to which I trust this paper will lead. Only practical dentists know just how much the poor really come to the dentists, and just how far they appreciate the value of good teeth.

I have been informed that at the institutions in New York city where dental work is done in clinics at about one-half the rates charged by dentists in their offices, there is such a crowd of patients that it is difficult, if not impossible, to accommodate them all. For my part I believe that doctors are far too careless in the matter of examining their patients' teeth and directing that the dentist be consulted in every case that requires his services. I go further than this, and assert that the text-books on medicine and hygiene are altogether too careless in impressing the need of inspecting the teeth of patients upon the minds of the younger practitioners. Good teeth are just as necessary, yes, I may say, far more necessary to good health than good eyes, and yet we have upon our shelves scores of works upon the eye and ear and few or none upon the teeth. The muscle-cutting oculist fills pages of our medical periodicals with his disquisitions ; but the dentist either does not write, or his writings are published in the journals especially devoted to dentistry, and the general practitioner does not see them.

Of course every well-informed physician appreciates the value of good teeth, and when asked for an opinion insists perhaps strenuously enough upon his patients going to the dentist. But I do not believe that enough attention is paid to these enormously important organs by even the best family practitioners ; and when we reach the class of doctors who practice among the poor, it is quite certain that they do not pay enough attention to their patients' teeth, especially to the teeth of the children. The teeth of the very poor are, according to my observation, almost universally bad, and, beyond occasionally having an aching tooth extracted, there is practically nothing done by this class of people for their teeth. Their bad and insufficient diet causes a lowering of the vital forces in general, and especially is the cause of indigestion, malassimilation, faulty metamorphosis, and most of all, perhaps, of dental caries ; as the teeth decay and break down it becomes harder to properly masticate the food, and there arises a tendency to eschew proper food and to seek for softer and more highly-seasoned food. Working people should eat food that requires considerable mastication,—strong food, so called, like the black bread and beans upon which the German peasants flourish so well. Another important consideration is that the dyspeptic stomach craves stimulation, and so the vicious circle is completed. Men and women drink rum to quiet a gnawing in their stomachs, which often is aggravated, if not caused, by bad teeth.

It is folly for me to point out to a body of dentists the evils of bad teeth. I only allude to them in order to bring them up for discussion and to emphasize what I am about to endeavor to suggest a remedy for. Of course the poor need to be instructed in numerous matters pertaining to health and hygiene, ventilation, personal cleanliness, avoiding damp and unwholesome dwellings, wearing sufficient clothing, etc. Into most of these questions philanthropic and altruistic people have entered, and it is presumed that their labors have had some effect in mitigating the sanitary evils of the lives of the laboring classes. Is it necessary also to begin a crusade in order to induce the poor to go to the dentist as soon as their teeth begin to decay? I am inclined to think not, at least I believe that very considerable numbers of them would have their teeth properly attended to if they could afford it. It is certain that the free ear, eye, throat, and skin clinics are well attended, and while, from the nature of the case (dental caries being more insidious in its course, perhaps, than most maladies), the poor might not seek the aid of a dental clinic so freely as they do the clinics just mentioned, still I believe that vast numbers would avail themselves of such clinics if they could. This would be specially desirable in the case of children. Dentistry has probably conferred no greater benefit upon mankind than the practice of filling and preserving, as long as possible, the deciduous teeth. I need not enlarge on this topic, its importance is now so generally acknowledged. We can occasionally induce a poor mother to take her child to the dentist to have the first teeth filled, but she will generally decline to do so on account of the expense. Even among the well-to-do the value of preserving the milk teeth is not yet sufficiently appreciated, and naturally is still less so among the poor and uneducated. Still, much could be done if it were not, as said before, for the expense. These desultory remarks have been intended to show, first, that were it not for the attendant expense the poor would much oftener consult the dentist than they do, and, second, that doctors very generally feel the necessity of sending their poor patients to the dentist, just as they do now to the oculist, the aurist, and the dermatologist, if it were practicable. And third, that, as the doctors themselves become, as a class, more liberally educated and broad-minded, they will more truly appreciate the value of the teeth and will more and more instruct their patients in the matter, and so knowledge, taking its usual course from the higher strata of society, will percolate down to the lower, and there will be a greater and still greater demand for dental clinics for the poor, and steps will have to be taken to meet this demand. I feel positive that in a comparatively few years such facilities will have to be provided. You may say that medical charities are at present entirely overdone, and that many an honest and worthy practitioner is cheated out of his just fees by these eleemosynary institutions. Admitting that injustice may have been done the struggling medical man, has that fact prevented an enormous increase and expansion of medical charities and clinics of every description? and it may safely be questioned whether the lot of the struggling practitioner is harder to-day than it used to be. An hour or so before writing these lines I have read of a half-million dollars bequeathed to the dispensary of the Long Island College Hospital. The amount of money given to hospitals and medical charities of all kinds is simply enormous, and is increasing year by year. The world, it seems, never was so near as it is at this moment to acknowledging that we are our brother's keeper, and we must provide for his wants so far as we are able, both spiritual and physical. A poor man can have his every bodily ailment and deformity gratuitously treated, and that too by the best available skill, except his teeth,—perhaps the most generally important and necessary of all the special organs. This long-felt want will surely be filled. Why should this society not take the initiative in the movement?

There is another aspect of the case which intimately concerns you as members of the dental profession. Dentistry has made claims to be considered a special branch of medicine, and there is undoubtedly a growing disposition among practitioners generally to admit these claims. The venerable and distinguished Professor N. S. Davis publicly acknowledged, a number of years ago, his adherence to the view that dentistry is bound to occupy such a position, and it cannot be doubted that his words were prophetic. With increased honors come increased responsibilities. The higher position a man attains in the medical profession, the more time and thought must he give to charitable work. So the dentists, if they wish to be esteemed by the public generally as specialists of medicine, must give of their time and skill to treating the poor. They must do as the oculists and the aurists do, or give up, in some measure at least, the place which they deserve to hold among their professional brethren. It is the willingness to give time, thought, and skill to the service of the poor which has elevated and ennobled the profession of medicine. It is this that has made it the most generally beloved and respected of all the professions. Why should not this society, well and favorably known over the entire country for its enterprise and its scientific spirit, for its efforts to raise the profession of dentistry to the height it ought to occupy and is destined to occupy,—why, I say, should not this society, the New Jersey State Dental Society, celebrate its silver anniversary by setting on foot a movement which is sure to succeed abundantly, which will cover its originators with honor, and will forever stop the mouths of those who have carped at the want of professional spirit among dentists, by asserting that they are not willing to give their services to the poor without compensation?

What more fitting action could be taken to celebrate this auspicious year, the twenty-fifth year of your existence, than to inaugurate a movement for the establishment of free dental clinics for the poor? And why should you not have the honor of doing something that will immeasurably benefit society at large, and will bear fruit by its elevating effect upon the profession of dentistry?

By doing this you will put the general practitioners of medicine under a lasting obligation, which they will not be slow to appreciate. You will encourage physicians to work more faithfully among the poor, because they will feel that, with your efficient help and counsel, their efforts will be so much more efficacious, and you will do your part toward establishing that bond of union that ought to exist between all branches of the practice of medicine.

The healing art, the most beneficent, the most unselfish, and the most charitable of the arts, calls upon all who practice in any of its departments to bear their share of the care and nurture of the poor and the unfortunate. This is your time and your opportunity. Stay not your hands from the good work, but do quickly whatever there is in your minds to do.

DISCUSSION.

Dr. **Pease**, New York city. Mr. President and Gentlemen: This paper I appreciate. I have the opportunity of seeing the mouths of many of the poor. I am identified with the Five Points House of Industry in New York, and am instructor in aural surgery in the Metropolitan Post-Graduate School of Medicine. The dental wrecks which I have seen are pitiable; the patients are unable to spend money upon their mouths for the repair necessary to keep the teeth there. We of course handle many cases at these institutions; at a nominal fee at the Post-Graduate School, and gratuitously at the House of Industry. There are cases where repair cannot be made because of a lack of foundation. In this case, where the dental organs are gone so that they no longer act as masticators, we instruct the patient to use the tongue in macerating the food, which should be finely cut; that they retain the food in the mouth and macerate it with the tongue thoroughly, incorporating the saliva thoroughly. That is a great factor in proper digestion of the food after it reaches the stomach. If the food is not thoroughly macerated, there are some classes of food which become packed during its passage from the œsophagus into the stomach, and there the gastric juice attacks only the surface, whereas, if the saliva is primarily mixed with it, it permeates the entire bolus.

From my standpoint I heartily indorse the views of the writer of this paper, and I trust that the time may come when the poor may have their teeth taken care of quite as well as those who are able to pay for treatment.

Dr. J. ALLEN OSMUN. This is a very difficult paper to discuss, because I take it that every man who has sympathy for his brother constantly feels sorry for him in misfortune.

Dr. Newton suggested that this would be a glorious time for us to inaugurate a public clinic for the care and relief of our unfortunate brethren. It so happens that about fifteen years ago or thereabouts the New Jersey State Dental Society, appreciating this fact, appointed a committee consisting, I think, of Drs. Stockton, Meeker, and myself, to inaugurate an infirmary in the city of Newark. We labored faithfully and assiduously to accomplish that effect; but we were ahead of the time and we had to cease.

In States where there are dental colleges this want is partially made up by the infirmaries connected with those institutions. How to establish an infirmary and meet the necessary expenses are very difficult questions to deal with. Dentists are busy men, and in their own practice they work all day from sunrise to sunset during the working hours, while a physician can, if he has been overcrowded during the day, steal a little time from the evening hour or early morning; but not so with the dentist. The practicing dentist must have the light of day in order to do his work successfully and thoroughly.

I have a hobby,—I am sorry for you, but I have,—and a man with a hobby is going to talk to you. My hobby is that the dental profession is behind the time in this one fact,—that they have neglected to educate the public mind to the necessities of dental treatment and the opportunities that are lying before them. Hence, when some fifteen years ago we sought to establish a dental infirmary in Newark, we found that the people did not appreciate the fact. Why, the idea of people having their teeth attended to struck them as something very peculiar, and that they should be asked to subscribe money to keep such an institution going, they could not see it; and so they did not subscribe, and we did not have our dental infirmary. Where we made a mistake was that we should have gone to the hospital and had a dental annex attached to that institution ; but we attempted to start an independent infirmary, hence our failure.

This is a difficult question to deal with ; I do not think there is a gentleman before me now who does indorse the sentiments of this paper and thoroughly believes that it is the right thing, that it is a good thing, that the poor man who is suffering with pain in his teeth and who suffers as acutely as the man with the full pocket-book should have relief. It is our duty as practitioners of a beneficent profession to give our time, talent, and money to the alleviation of our brothers' suffering. How to do it, when to do it, and the means that will enable us to do it are problems which will require a great deal of study and a great deal of thought in order to bring about such a desirable result.

I am obliged to Dr. Newton for his paper ; it is in the line of what I think we ought to do, and I hope it will bear fruit in the future. (Loud applause.)

The VICE-PRESIDENT. Dr. Stockton, you know something of this movement.

Dr. STOCKTON. I did not expect to speak upon this matter, but I am always glad to encourage Dr. Newton, who has been so kind on many occasions as to come to the New Jersey State Dental Society and read papers before us. I, and I have no doubt every one here, am grateful to the doctor for what he has done for us. "The poor are always with us," and they have their many ailments. You know the old Irishman said he had erysipelas in his face, lumbago in his back, the rheumatism in his feet, "and now, begorra, I have trouble with me teeth ;" and so it always will be, and how to escape or how to meet this trouble is a question for the wisest of us.

I don't know why we can't do as much as the medical profession. Dr. Newton knows—you all know, perhaps—the reputation that Dr. Charles J. Kipp, the oculist, has, not only in New Jersey, but through the world,—he has a national and world-wide reputation,—and for years that gentleman has maintained an infirmary where the poor have their eyes and ears treated free of expense. Every afternoon from two o'clock until four or later he is at his post, and gives freely of the knowledge that he possesses to those who are unable to pay, and the expense of that has been gladly paid by the wealthy citizens of Newark, who provide for the rent, pay the expenses of any assistants, or any other expenses that are necessarily incident to the treatment of the poor. And, as I said, Dr. Kipp for years has given his valuable knowledge and experience to the poor of our city, and at any time when the funds run low, all he has to do is to say, "I want some more money," and it has never yet failed to come forth.

Why can't we do as much? The teeth are as valuable and as necessary to health as is the ear to hear or the eye to see. I hope, as Dr. Newton has said, that something may be done. Anybody who reaches the age of twenty-five has come to that period of life when his strength is as great as ever it will be, and when he is prepared to put forth the strength of his muscles and to labor, and if he is not possessed of the powers that will enable him to do some good in the world, at that age, he never will be. And have we not arrived at that period,—not the ten or twelve years ago that Dr. Osmun referred to, but now when we have just come to young manhood's vigor, and let us do something, let us get together and show that we can do as much as the medical fraternity are doing, and that we will take care of the teeth of the poor, which is as necessary to be done as it is to take care of their eyes or ears or any other part of the body.

Vice-President SANGER. Dr. Flagg, won't you touch upon this from a college standpoint?

Professor FLAGG. Thank you, I am not surprised that this Society has invited our friend Newton again and again to read papers before it. He has been asked, he says, three times; he will be asked three times three during the next two or three years, and I want to add my testimony to that of the others in praise of his paper, and to say that I don't think I ever heard as *good* a paper as the one that he read to us this morning. I have been connected with this work in a comparatively poor direction for so many years that I have felt to the full the importance of this subject, but as our good friend, "young" Stockton, of Newark, has said, I feel the weight of the work, the paper of Dr. Newton weighed upon me like a heavy responsibility. I felt like getting up immediately and putting in my little word of comfort to the gentleman who read the paper; I felt like speaking. Still, I would not have spoken had not the Vice-President so kindly spoken to me, for I did not come here to speak this year. I came here to listen and learn, and to get facts to carry home with me.

Now, this work of the poor is a great work, it is a tremendous work, but this Society has upon its hands other work of almost equal magnitude. It has the National Association of Faculties to think of; it has the National Board of Examiners, which of itself is a serious job. It has to bring those parties somewhere near up to the mark; it has to take them out of the dirty black mud of the slough in which they both rest now, and bring them into something like a decent cleanliness; so, taking up this subject of the treatment of the teeth of the poor is a fearful work. I feel like saying to our friend Stockton, "I will do this much, I will subscribe so many dollars a year." Now I was going to say five dollars, some magnificent sum. I thought, while listening to his remarks, of the work that was done last year at our Swarthmore College. The girls erected a fine building for their athletic work. They have a pull, the girls have, they can do anything they set their hearts on; we all know that; so they "pulled" and built their elegant building. I helped them; they have a pull on me; they always have had. (Laughter.) They held a meeting, and one of the speakers said, "Now, girls, ought we not do something to celebrate this, something good, something that will be lasting, a sort of a monument, as it were, to our work? We have accomplished our building; we have an elegant place. Now, let us do something else; and I want to suggest that we make a scholarship, and that we send the girl who does the best, if she wishes it, to some advanced school, where she can continue her education, and we will call it the Lucretia Mott Scholarship, for Lucretia Mott was a model woman."

They started a subscription, and it was done, and the first girl has gone this year to commemorate the Lucretia Mott Scholarship.

Now, it is a harder work by a great deal to do all this work of the poor. One among us has said that the doctors can steal an hour or so in the evening. In my early life, in a most indifferent manner, I doctored for a few years, and I suppose that is the reason why I am so dreadfully devoted to *our* profession! We all call it "profession." The *Cosmos* says it is devoted to the interests of "the" profession. I don't like putting it as "the" profession, but it is a profession, and that is the reason I am opposed to joining it on to the medical profession. The life of a medical practitioner is a dog's life; the doctors cannot steal any odd hours here or there. If you had been going all day long until ten or eleven o'clock at night and had reached your well-earned rest, and some one should come to the camp and rouse you out and ask if you would not get on your horse for a journey of fifteen miles or so in order to administer to somebody who had an awful stomach-ache when the messenger left, but who was quite comfortable when you arrived, you would then understand that you cannot steal any hours from that profession; it is a dog's life. It is all day long and all night long. Talk to the doctors' wives about it; they know. They cannot go to a party or anywhere else, because these calls are so liable to happen. But there is a still greater obstacle in dentistry work for the poor, and that is the necessity for *actual work.* When one can go to the oculist and he looks at the patient and says, "You want such an ointment," and can look at another and say, "You want this or you want that," and in a very short space of time can attend to a dozen or twenty persons and make them comfortable, that is a very different thing from the work a dentist has to do. Half a dozen patients with him means a great deal of work. Those of us who practice in schools have a little different experience; we say to the young ladies and young gentlemen, "You must make this application thus and so, and if it does not do well in that way, then you must do so and so," *but that has all got to be done.* Or you send a patient to one of the young men or young women and say that she will be treated gently and kindly, but in a very little while the patient comes back and says, "If you call that gentle, I don't know what you call rough; I was almost killed." Of course, if you had made that application yourself, the patient would not have been almost killed; they would hardly have known the work was being done, owing to your many years' experience, because of your knowledge; and then, of course, comes in the question of charges, like the carpenter who charged five dollars for nailing up a board,—twenty cents for the board, five cents for the nails, and four dollars and seventy-five cents for knowing how to do it!

Now, I am old, I have worked until I am tired of working. I want to rest, but I would gladly subscribe money for this object in my moderate way, and it would have to be moderate, for I have not much left after giving for fifty or sixty other things. I would subscribe to the fund for the purpose of having, say in Newark, a trial "Clinic for the Poor," and I would also give my time. I would be willing to go once a month to Newark to spend an afternoon or to give time for the purpose of simply directing what might be done in certain cases. (Loud applause.) But do you not see the amount of work? Now, as I said before, I have nothing to retract; you know I never have, or "almost never." I would come, and I think it might be a good thing, but, as the gentleman has said, the work is so enormous. The trouble is that one tooth goes and then another goes. It is not that caries of the tooth can make another caries. I trust no one believes that; it is not that micro-organisms can come in and *cause* decay; I suppose almost everybody knows better than that, but it is the foundation, it is the poor dentinal soil; it is not like our soil here in New Jersey. You know we can raise everything, we can even raise "Cain;" we can raise everything in New Jersey from one end to the other. We commence our soil at the Palisades with rock, and can raise rocks, and our soil goes right on to Cape May, with its glorious sand, its level, delightful beach, and lots of other good things. It is because of the poor tooth structure and the want of time that the work for the teeth of the poor is hard. These people live under the disadvantage of circumstances; their food is poor, and there are so many things that tend to the detriment of tooth-structure as well as every other structure. It is wonderful the muscle and brawn they have, it is wonderful what physical development they have, but it is also wonderful how poor the *special* things of the poor are, and when the teeth are poor and the soil is favorable for the propagation of micro-organisms then the work that has to be done is enormous. The poor come to us in our clinics with enormous cavities, and with thirty or forty molars in their mouths! With all the crowns gone! Why, you could work for a week and then hardly get them in any kind of order. Then again there is the lack of education. We must teach these people that they must come when the cavities are small. I say it is a wonderful work, and brother Hornets and brethren of the State Society, count me in. I don't want to be a committee man, but when you are started, if you want any help, any funds, or any personal work, call on me. (Loud applause.)

Dr. BARRETT. Concerning the desirability and advisability of this work there can be no question. It is a standing reproach to us, on the part of the medical profession, that we do not do the amount of charitable work that we should. But no amount of rhetoric that we may expend upon this subject will provide the poor with proper dental infirmaries. The great trouble with our infirmaries is the expense of materials. The medical faculty in their clinics and in their dispensaries do not furnish anything whatever excepting their own knowledge; that they can give and will give freely; and they do give it freely. I believe that dentists are just as ready to contribute the same amount of knowledge, the same amount of time, and the same amount of labor that is contributed by the medical profession. But that doesn't do—that doesn't answer—that is not sufficient. The extraction of teeth can be obtained anywhere, and so, too, soothing remedies that might ease the pain for the time being; we are all ready to do that; but that doesn't fill the bill, for the same patient will return again to-morrow and require the same application, unless such preventive measures are instituted as will ward off the future trouble, and there is where the difficulty arises. It is in the provision of the necessary materials for the filling and care of teeth or for the manufacture of artificial substitutes, and until some scheme can be devised which will produce sufficient funds to provide the material, the necessary material which is expensive in almost all cases, and in some cases quite expensive, until that can be done, dental infirmaries must be more or less ineffective; must be quite ineffective—utterly ineffective. There is no dentist who is ready to spend his time and money both in this direction. If the people at large will provide the money, the dentists will give the time and skill. And the first thing, it seems to me, to provide and look out for in the establishment of a dental infirmary, wherever it may be, whether in Newark, New York, or any other place, is to arrange for sufficient funds for the procuring of the necessary material. That, it seems to me, is the initial point that should be attacked, and we should not begin by the expenditure of a large amount of rhetoric upon the needs and necessities of the poor, which every one of us recognizes at a single glance. (Applause.)

Dr. ADAMS. Dr. Barrett has struck the key-note when he says it is necessary to have money provided in order to carry on this work successfully. That was the point where the committee failed before when they undertook this thing a few years ago. If that can be overcome, I know there are enough doctors in this Society, either around Newark or elsewhere, to start such an infirmary, and possibly after ascertaining what we could do through infirmaries in the large cities, they could be started in other places. And, Mr. Chairman, in order to get this matter in shape, I make a motion that a committee be appointed from this Society to examine into the matter to see what can be done in the way of securing funds; and if sufficient amount should be subscribed, that at the proper time, as soon as it is considered feasible, an infirmary be opened at such place as the committee may decide.

The above resolution was regularly seconded and carried.

Dr. Barlow. I would like to say a word on the subject of infirmaries.

A number of years ago the idea was suggested at Jersey City to start a dental infirmary. Application was made to the Board of Aldermen, and they passed an ordinance giving us the use of the room of the Overseer of the Poor at certain times. It was arranged among a number of us that we should each attend one day of the week, two hours during the day, for the treatment and extraction of teeth of the deserving poor. The thing was advertised, and we put cards in circulation, which were distributed among city officials, clergymen, physicians, and others, and left at the drug-stores. The deserving poor did not seem to take much advantage of the opportunity during the appointed hours. We went there day after day and had very little to do. Sometimes we wouldn't have a single patient; but we found out we were very much annoyed at home. People would get the names of the different dentists who were in attendance at the infirmary, and they would call upon them during their office hours, so that they were sometimes overrun with all classes of people, who would come in with toothache, bringing sometimes two or three children along, and annoy them very much, so that finally we had to abolish the thing entirely, for it got to be a perfect nuisance.

So you see the poor do not always take advantage of the opportunity when offered, but choose their own time and place for having the operation performed.

Dr. Hardison. In reference to the treatment of the teeth of the poor, it seems to me you gentlemen have gone over the field very thoroughly. But education seems to be lacking with reference to the poor and their care of the teeth. They are lacking in knowledge of the fact that their teeth require care. Perhaps not three-quarters of the children who attend primary schools ever get into our high schools or schools of a higher grade, where, at the present time, we teach physiology. The result is, they do not care anything about the teeth. As the gentleman has just said, they do not go to the clinic or place where we will give them free service, but bother us at our offices, where we cannot attend to them. If they had knowledge such as our wealthier boys and girls get, it might be different. Dr. Newton, I believe, in reading his paper, said that fashion had much to do with our wealthier people having their teeth attended to. I think that is not so. I think it is the education they get at home and at school. I think if we can start the children of the poor people right, as they grow up they will pay more attention to their teeth than poor people generally do, because they do not know the necessity of it; and will take care of them. It has been said that they need teeth extracted and "other work." Now I don't think that expresses it properly. "Other work" is what poor people require. But they do not know the need of preserving their teeth. The school system should be such as would teach them that necessity, so that as they get older they would probably take advantage of the free hospitals or clinics which, by that time, probably will be established; for in the mean time the necessity for them will be recognized by philanthropic people, and provision made whereby the necessary work can be provided for, and the poor will receive the attention which their teeth require. If you teach children at the schools to care for their teeth you will then be starting the reform, and starting it at the right place.

Dr. BEESLEY. Permit me to say for the information of the gentlemen of the Dental Society, that in New Jersey we have a law which makes it compulsory for the public schools to teach physiology from the highest to the lowest class, and I am happy to say that we are ahead of some other States in that respect.

Dr. HODGKIN. At the present time one of the greatest encumbrances in this matter is the fact that the dental infirmaries connected with colleges are charging almost as much, and in many cases more, than the regular practitioner for the work they do. (Applause.) I am heartily in favor, as a starting point in this benevolent work, of compelling the poor to pay for the material and giving our services free.

The New York Hospital in Fifteenth Street, with which I was connected some years ago, has an out-patient class. That started as a free out-patient department, but the impostors among people who could well afford to pay for treatment and medicine so overran the institution, together with others who seemed to have a mania for running to the physician every time he came to the institution, and taking all the medicine they could get him to give them (although what they did with it no one knew), was so great that in order to drive away that class a monthly fee was established for treatment of one dollar, and ten cents for each prescription. There was a way by which a person who was needy could be relieved of paying the monthly fee and the ten cents for prescription. By going to the superintendent and stating their case they would be given a free card. Experience in that system proved that it was those who could better afford to pay for the treatment and the medicine who made application to the superintendent for a free card than really deserving cases. I made an inventory of the prescriptions for three years, and the result showed that ten cents a prescription more than paid for the medicine dispensed from that department. The cost of dental material is not so very great but that the poorest person attending an infirmary can afford to pay the actual cost of the material. When the time comes that you can afford to wipe out that expense and carry it on yourself, do it.

Dr. BARRETT. The gentleman makes one assertion that I cannot allow to pass unchallenged, and that is, that infirmaries and colleges are charging as much or more than is charged in private practice. That is absolutely not true. The gentleman doesn't know whereof he affirms. That has been often charged, and it is a matter which should be examined into. It is a calumny against the colleges, and something which should be proved or disproved. I am sick of hearing this charge over and over again, based upon nothing whatever. I am not a member of this Society. If I were, I should offer a resolution that a committee of three, or a certain number, be appointed to examine and attend the infirmaries of the different colleges and find out what the charges are and whether this charge is true or not. I wish some member of the Society would offer that resolution.

Dr. FREEMAN. As Dr. Barrett is a professor of a college, I will ask him if there is any charge for cement or soft filling in his college.

Dr. BARRETT. Yes; there is generally.

Dr. FREEMAN. I will state a case. The patient was referred to one of the colleges for some work; his case was stated to the demonstrator at the college, and he came back to me with the statement that they wished to extract six teeth and charge $3.50 for putting in the cement filling. The young man's income was only $3.00 a week. I want to know if that is charity? The case was stated to the demonstrator or superintendent of the college.

Dr. BARRETT. Undoubtedly many of the colleges have abused their privileges, but that such is universally the case, and that a general charge of that kind can be sustained against the colleges, I claim is not true. I am connected with two dental colleges. In those colleges artificial teeth are made for deserving persons at $3.00

for a full plate of teeth, which, as you know, is just sufficient to cover the cost of the material. For cement fillings from ten to twenty-five cents apiece is charged. That the privileges are undoubtedly abused in some cases there can be no question. I do not know what individual colleges may charge, but it is a calumny upon the profession to say that this thing is generally done, because if their schools do such kind of work, why it certainly should be known, and I say it ought to be investigated.

Dr. OSMUN. I think that is a very good idea, and I move you that a committee of five be appointed from the New Jersey State Dental Society to investigate this thing thoroughly and report at our next annual session. It is time that this question should be settled; I have heard it almost all my life, and I should like to see how it comes out.

The above resolution was regularly seconded and carried.

Dr. KANE. In connection with the establishment of infirmaries something has been said about the cost of filling. I merely desire to say that as far as the company I represent is concerned, it would be more than glad to supply the free clinic with all the filling-materials it required without cost.

Dr. HOFF. The sentiment of the profession with regard to the care of the teeth of the poor has been very well brought out to-day, and it is well that it has. I think if we can get this matter thoroughly discussed, we will find a practical way to bring about the method for taking care of the teeth of the poor. I don't know what class of poor the gentleman had in mind when he read this paper, whether it was the absolutely poor or the moderately poor. There are all grades of poor people, and people who have to do with college clinics find there are oftentimes people who apply for charitable services in those clinics who are not poor in this world's goods by any means. But I take it the class of poor that we have talked about to-day are the actually poor people,—those who are unable to have dental work performed and pay for it. There is no question but what we all feel we would like to do something for this class of people, and that we would be willing to make sacrifices not only of time, but of money, to do it. I should, personally, and I have no doubt, from what has been said here, that every one else would. The question of how we can do this practically has been spoken of and suggestions have been made, but from the tone of the remarks it seems that nothing conclusive has been reached. I have thought of this matter considerably in my long experience, and at one time I formulated a plan by which this might be accomplished. My idea was something like this—I have not got it in very definite form, but this is what it was something like—that the dentists in the community where there are as many as three or four practitioners should get together and open a clinic room for the treatment of the poor people, and then instead of giving their personal time to that work for two or three hours a day, they should employ some one to take charge of that room, and if necessary pay the expense or provide for the expense of the room, and the man who has charge of it, in some way. My idea in connection with that arises very much from this fact: I am connected with an institution for training young men for the practice of dentistry, and I have a great deal to do with these young men, and I have a great deal of correspondence with them; and there is always a great inquiry among them, "What can I do during my vacation? How can I spend it profitably? Do you know of any office that I could get into where I can employ myself profitably during the vacation?" It is very difficult for us to provide those openings. The men that we would like to send our students to will not take them. The only thing we can do is to say, "You go out and see what you can do." We have sent out invitations to certain men and asked them if they would not take these students during vacation, but they have no room for them. They don't want them in their operating rooms, and they can't do their mechanical work or extract for them, and so they can't make much use of them, and there seems to be no place for them. It seems to me work might be found for these young men in connection with these free clinics that are established in different places, in the small towns—towns of ten or fifteen thousand inhabitants. The dentists of those places could very well afford to sustain a clinic. In larger cities you could sustain a number and call them infirmaries, where patients could have work done at a nominal fee, and a student could be put in charge. Not only this, but there is considerable agitation in the profession for a longer course of study in connection with the colleges. A four years' course seems to be demanded. I think that a four years' course is not necessary just now, but that it might be very useful if all the work was not done in the college; for, you know, colleges do not teach everything, and the fourth year might very profitably be put in at an infirmary, where students could have practice and give ease to unfortunate people who could not afford to pay for the services of a trained man. The dentists of a community might organize an infirmary and put such a man at the head of it. They could systematically visit that clinic as individuals or as a body, and have it under their direct control, and the young man might be remunerated by the receipts for mere nominal charges for his services sufficiently to pay the expenses of his board and living, together with the expense of the office, while it was maintained for the benefit of the deserving poor or those who could afford to pay a small fee rather than not have the work done at all. I think the dentists could not only in this way do a very good work for the poor people or the moderately poor, but it would also be useful in assisting young men to get that experience which they undoubtedly need, and a knowledge beyond what they can get in any college infirmaries and clinics, and which would better fit them for active practice, and I know the young men would be very glad of such opportunities. I think that if this matter was started in some such way as this, we would very soon be able to find the necessary funds. There are plenty of young men from the colleges ready to spend a year in such places for the practice they could get out of it and the small nominal fee for services.

Dr. BARRETT. I ask permission to make a disclaimer. I should be very glad to have this committee appointed, but I want to call your attention to this point, that I speak of the poor—I do not speak of the wealthy people who come to the college clinics and abuse the privileges of them. I have known a person come to a college clinic, and fifty dollars be demanded for the making of a rubber plate. The person was in very good circumstances, abundantly able to pay a dentist, and that fee was demanded with an object. When she asked why more was charged than she would have to pay elsewhere, the reply was, "Because you should go to the office of a private dentist, and not come here and enjoy the privileges provided for the poor, for you are not a poor person; you are not a person that we should work for."

I desire to enter a disclaimer as referring to anything of that kind. Complaint has sometimes been made that colleges have taken patients that should never have gone to infirmaries, but to a private office. Such patients as the one I have referred to the colleges are perfectly right in charging even an exorbitant fee so as to drive them away, because that is not the class of persons they desire, for the work is not intended to cover that ground at all, but poor persons only. I think this committee should examine every college and see whether they are doing work for the poor or not.

Dr. HEAD. As one entirely disinterested in this, excepting in so much as I would like to have absolute proof and would not like to leave any loop-hole which might afterward give rise to question, I would suggest: When this committee is appointed, pray let the names be kept secret and let this committee do its own secret work. Let them not go heralded to the colleges where prices could be fixed up, but let them go quietly and send their patients to the colleges and have the matter tested.

Dr. WM. MAYNARD. The public school has been spoken of, and the study of physiology. I have yet to see any physiology that treats of the care of the teeth, and I think if we would look into the mouths of our own patients and see how few of them know how to properly cleanse and take care of their teeth, we should not wonder that the poor do not. I think one of the most important and one of the very first steps to be taken is to educate people regarding the care of their teeth. The public schools are now teaching in most States the action of intoxicating liquors, which is one of the grandest steps it has ever taken; and I think one of the most important steps to be taken in regard to the teeth of the poor is to have introduced, if possible, into physiology, the subject of the proper care of the teeth. When I say that, I mean to go into the details of cleaning the teeth; I think I am safe in making the statement that to-day throughout the country you will find that four people out of five do not know how to properly cleanse their teeth. A patient comes into the office and says, "There is a filling you put in so and so, and it has come out." You look into the mouth of the patient. "Oh, I clean my teeth," she says, and you know the minute you look into that mouth that she does not do it, unless it is done by simply looking at the brush in the far corner of the room! You will find that many people do not know how to brush the teeth properly, and when we find that patients come to us who have had the care of the dentist year after year; who come to us from other dentists and do not understand how to clean their teeth, can you wonder that the poor, who have had no such care, do not understand anything about it? I think one of the most important steps is to have that matter taken up in the public school, and I think I am again safe in making this statement, that four teachers out of five do not know how to properly do it themselves. We all know that the care of the teeth is one of the first and most important steps for a child to take looking toward the protection and saving of the teeth; and what can a dentist do in protecting the teeth if the patient is not willing to do his part? I for one would be glad to do everything in my power to assist those who are willing to do their part, but when a poor person comes into my office who I know does not touch the teeth with a brush from one year's end to another, I am not very much encouraged to put much time or expense upon that person's teeth. We doubtless all of us have had patients come in and have seen fillings that we put in the year before, and we have asked them how long that filling has been there, and they will tell you a year or so, and you will ask, "Have you brushed the teeth since?" and the reply will be, "No." Is it any wonder that the fillings do not last? Now if that is the case with patients of education and means, what can we expect of the poor? and it seems to me one of the most important things is to try by agitation and by law, if possible in the States, to have the matter introduced into the public schools, so that they shall go into the minute details of the care of the teeth and cleanse every part of the mouth by some means—whatever the profession may deem best; and in addition to that, to impress upon the poor the importance of the teeth upon the general health. You take the poor people that come into the office with children. They don't realize that when the child is growing from two to ten years of age there is being laid the foundation of all future health, and that if children are not able to masticate their food while growing, they cannot expect in the years to come to have any physique or health or strength. That is the very foundation of their after-life, and I think that is one that is important to be taught in our public schools where the poor come, for that is the only place where you can reach them. You cannot reach them in your office, because they do not come there; but take them in the public school, and you can then impress that upon them. I have had patients come into my office asking me to extract temporary teeth, where I have refused to do it, and they have become irritated about it, and even said they would go to New York and have it done, at which I have said, "Go; all right." I have seen them go right back to the family physician and tell him about it, and he has come to me and asked me why I refused, and I told him why—to save the child from indigestion, because he could not masticate his food. People have their child's teeth taken out and then wonder why the child is so puny, when the reason is because he cannot masticate his food. I think the very first step to be taken is to impress upon the poor people and on children the importance of taking care of the teeth, and if they show they are willing to do their part, then let us come forward and do our part to carry the project forward; but it is certainly poor policy for us to go at it now and work for people who are not worthy in that respect.

Of course, there are lots of worthy poor. I am not saying that there are not, but if a person comes to me whom I consider a worthy poor person, one willing to do his part toward saving his teeth after I have done my work, I should be very willing to help him.

Dr. OSMUN. That is right in line with the point that I made, that the dental profession do not use the public press enough as an educator. By the use of the public press such sentiments as have just been expressed are cast broadcast among the people, and will bring forth most profitable fruit.

Dr. DAVIS. I was very much interested in the remarks of Dr. Maynard in regard to caring for the teeth. He says he doubts if many of the teachers in the public schools know how to brush their teeth. I have been very much surprised myself at that very fact. Many persons who take good care of their teeth, or who endeavor so to do, and brush them thoroughly after every meal, know very little about taking care of their teeth. They will come to you and say, "Doctor, I can't get at these back teeth; I can't brush them; they get full of stuff and I can't help it. No matter how much I try, I can't get around to wipe off whatever is gathered there."

If you will instruct your patients, as I do myself very freely, to open the mouth, put the tooth-brush in the mouth and close the teeth together, you will find they can get back there without any trouble. They can get the tooth-brush clear around back of the wisdom-teeth, and will be surprised at the result. You tell your patients to do that, and the next time they see you they will tell you that they never before knew how to clean their teeth. I have seen that in the case of people supposed to be well educated and to know how to take care of their teeth.

Now in regard to students occupying their spare time, as has been suggested, it might be very well for the student, but as for any money coming back from those willing to pay a little fee, I doubt it very much, for this reason, that we have many a dentist in all the large cities at the present time advertising to fill teeth for twenty-five cents or fifty cents, and people would much rather go to a place of that sort than to go to some student dentist who might be left in charge of an infirmary of the kind spoken of. At least that would be my idea, that people would refuse to go to such an infirmary. If they could afford to pay a moderate fee, they would rather go where a moderate charge is made by an old practitioner.

Dr. **Tenison**, of New York. I would like to say one word before the discussion is closed. I desire to make a suggestion that in case you carry out this object, which I think is a very worthy one, you adopt some method by which there will be no fraud. We know as a fact that there are persons going to the dental infirmaries connected with colleges for free treatment who are perfectly well able to pay a good fee to a private practitioner. Dr. Barrett mentioned a case of a lady going to their infirmary who was perfectly able to pay, and they knew it, where a fee of fifty dollars was demanded for making an upper set of teeth on rubber. I do not believe in that. I say if the patient is able to pay, refuse to do the work at any price. (Applause.)

Our object ought to be to work for the worthy poor and to get at the fact that they are worthy. No one should be received in any infirmary without a certificate to the effect that they are worthy and unable to pay for the services rendered, the certificate to be from some reputable dentist or from some reputable person in the community; and I make a suggestion that in the work of the committee to be appointed, they provide that in regard to any infirmary that may be established for the treatment of the teeth of the poor that they should be treated and nobody else, and that anybody who comes to them not recommended or indorsed shall be met with an absolute refusal to do anything at all for them. I do not believe in student work except in colleges. I am speaking of infirmary work, wherein the experienced practitioner gives a certain amount of his time free, and I do not believe in the work of students in connection therewith.

Dr. **Newton**. I want to thank the gentlemen very heartily for the spirit in which they have taken this paper, and I want to say that I was not in the least mistaken in thinking that a large number of dentists had carefully considered this subject for a number of years. I think the gentlemen in this room are practically united in a desire to support some such movement, and that the question is, how it is best to do it and to guard against its abuse, its mistreatment. It is a very serious question, and I think that the committee which is to be appointed will find that they have a great deal to consider.

The hints thrown out by Dr. Osmun were very important. I think they made a mistake by going to work separately some years ago and not invoking the aid of colleges or hospitals. I believe if the matter were properly brought out before Columbia College to-day, Columbia could not refuse to take action. I believe that Columbia College should take the step that Harvard College has already taken, and teach dentistry as one of the branches of the university course. I believe if that is done, the clinics will follow in that institution as part of the instruction.

I only throw out these hints as they occur to me. I am very much pleased at the practical form which the discussion has taken. We are trying to get at some solution of the problem, the importance of which is acknowledged by every one, rather than splitting hairs or wasting rhetoric. If any one is to blame that this matter has not been taken up in a more general spirit, and people generally have not been very thoroughly educated in this important question, I think it is the medical profession. I think the medical profession have not backed up the dentist; and I believe if the dentists do now begin by making such a move as my paper indicates, or by getting the medical colleges to do so, the medical profession will be glad to follow in line and make up for its past remissness.

It has been stated that the majority of people do not know how to care for their teeth. I think that doctors are greatly to blame for that. In the same breath you may say that the majority of people do not know how to properly care for their skin. Most people do not bathe sufficiently, and yet we all know the blessing of public baths. The public baths must be maintained, and I think public dental clinics must also be maintained, as well for cleanliness as the other ills that unfortunate humanity is heir to.

President HOLBROOK. I now have very great pleasure in introducing to you Dr. J. E. Garretson, of 1537 Chestnut Street, Philadelphia, Pa., who is on the program to read a paper on the subject of the "Underlying Principle of All Diagnosis."

A PRINCIPLE GOVERNING ALL DIAGNOSIS.

Your speaker grows the more forcibly impressed, as he grows in experience, that the proper and easy way of understanding and appreciating things lies with understanding and appreciating principles which relate with and govern the things. The circumference of a wheel, however great, is one as to outlook with the circumference of its hub, however small. Any circumference, however extensive, relates its every aspect with a point which is its center ; eye, located at point, takes in circumference.

It is the purpose of the present paper to direct attention to the facility with which diagnosis in every direction is to be approached if a right way be taken. As illustrative of such way, cataract affords an all-sufficient example. A cataract is an opacity of the crystalline lens. This opacity begins as a point or line, or it may be several lines ; any opaque thing situated between a strong light and a surface compels a shadow upon the surface. To diagnosticate the existence of cataract, nothing more is necessary than to consider the casting of shadows. A perfect lens is perfect transparence ; there being no obstruction of the light-rays, these pass through it, hence no shadow. A lens having an opaque spot or lines in it obstructs the passage of the light-rays at this spot or these lines, hence a shadow upon the retina. It is here perceived that any ordinary observer is able to say whether or not he has cataract simply by concentrating the light-rays that pass through his lens to the extent of affording a shadow. To do this it is alone necessary to make a pin-hole in a common visiting-card, and look through it toward the sky. If the lens be perfect, the hole will be clear and round ; if it be cataractous, the shadow cast upon the retina will show in the hole the size and form of the opacity which makes it. Is this not as simple as it is perfect? Consider the application of the principle to the uses of a lapidary. A diamond having a flaw or imperfection in it entirely invisible, when looked at after the ordinary manner, shows instantly the defect when placed between the eye and the pin-hole in the card : the defect casts a shadow.

An illustration of the application of a principle to the uses of practice familiar to every one of us, yet perhaps not thought of after the manner, lies with the application of the declension of Latin nouns and adjectives to the purposes of prescription-writing. To consider medicines, in the multiplicity of their names, as prescription-writing is concerned, would prove confounding to any memory. To recognize, however, the principle of classification, as this lies with the five Latin declensions, is to find the art of such simple significance that no wonder is called forth by its mastery in a few hours of study.

The doctrine of *ex*clusion is one with a principle. Consider the nominative singular terminations of the third declension. There are a good many of them,—quite a dozen. Is it possible for a bad memory to have these always at command for the uses of prescription-writing? Without fail! The nominative singular terminations of the first, second, fourth, and fifth declensions are so few as to be expressed, respectively, by the letters "a" for the first; "us," "um" (as medicines are concerned), for the second, "us" for the fourth, and "es" for the fifth. These being in mind, the third is known in this knowledge of the others. If a medicine has its class neither with the first, second, fourth, nor fifth, it is placed properly in putting it with the other remaining class, namely: the third, this being the only other one there is.

An audience of this kind is not to be detained by illustrations, a multitude of which, including the manners of induction and deduction, will strike every mind.

What is now to be offered is the excuse of the speaker for accepting the invitation of the Society to address it, and with it lies a trust that service may be done some, at least, of its members.

Medicine at large is a great subject. Libraries treating of medicines number, as their books are concerned, hundreds and thousands of volumes. Is any human mind capable of grasping the immensity? Consider the most energetic student standing in presence of such stupendous detail! What, save profound discouragement, could be anticipated? Resolve now all these libraries into one book. Resolve this book into one word. What, then, of the discouragement? As your speaker is concerned, such a word is with him. A single word is the foundation and full building of his practice. Shall, or shall not, a word be found to appeal to the Society here assembled after a like manner of import?

The word to be offered is not unfamiliar to all the hearers of to-day. Wherever your speaker has found himself able to make an application, the word has been pressed into service; this for the reason that he finds it the word of widest meaning and the greatest good that has ever come to the uses of his pen or lip; in it he finds a word leading to every point in the circumference of medicine, as in no dissimilar manner possessive of the hub of the wheel is the vantage point along every spoke to every point of a tire. The word is "DIS."

Consider that medical books treat not of "ease."

If there were nothing but "ease," there would be no occasion for medical books, nor would there be any medical books.

The universal subject of medical books is "Disease." The *principle governing all diagnosis*, and to which here the particular attention of the assembly is invited, lies with analysis of this word "disease."

Assuming the normal condition to be that of "ease," and accepting conditions to arise which are not the state of ease, necessity is seen to exist for a conversing term. Such a conversing term is found in the proposition "dis." A person, any person, every person, not in a state of *ease*, is in the state expressed by the term "disease." He has a dis.

Consider now. There are dises but not diseases. There is no plural to ease.

Here the principle, and here its application. We take the term "Disease." We perceive that all medical books and lectures and talks are concerned with a general circumference called medicine, which medicine treats not of "ease," but of a contrary state. With understanding of this contrary state lies then appreciation of medicine, and this contrary state has its expression in a single word of three letters, "dis."

Let expression of the principle be made through use of the blackboard. There is a word, "honest." If a man be not honest the calling of him is conversed by writing it thus, "dis-honest." A state of being comforted is conversed in dis-comforted. Honor is conversed by dis-honor. Jointed is conversed by dis-jointed. Lastly, ease by dis-ease.

Here, now standing upon the blackboard is the word *ease*. Consider what it signifies. Now we converse the signification. The word stands dis-ease. Appeal is here to the professional sense. To restore to the first-written word its signification, what is required? See, it is shown. (Dr. Garretson took up a sponge and rubbed out the prefix "dis.") (Hearty applause.)

The meaning of the doctorate, and the meaning of medical practice, lies with the discovery of and the rubbing out of dises. As the chalk dis upon the blackboard is concerned, your speaker has shown himself an able doctor, inasmuch as he has annihilated it. (Laughter and applause.) The matter, the whole of it, is here: Discover, understand, and rub out dises.

Is not the ground exposed a satisfactory one to enter upon and tread? Good, better, best, meaning knowing something, knowing more, knowing most.

Let conclusion be made with a few examples. A crumb in a tooth is a dis; wash it out. Air acting on exposed sensitive dentine is a dis; exclude it by a plug. A cinder in any eye is a dis; wipe it away. A stone in a bladder is a dis; open into the viscus and extract it. The poison of syphilis is a dis; antagonize it.

(The Secretary has to report his inability to get from Dr. Garretson more than this limited synopsis of his remarks, the doctor finding himself very busy.)

On motion, adjourned until 2.30 o'clock P. M.

SECOND DAY—AFTERNOON SESSION.

REPORT OF CLINICS.

WILLIAM H. HERTZ, D.D.S., Hazelton, Pa., "Practical Orthodontia." Exhibiting forty models before and after the correction of the irregularity in expansion, contraction and rotation or torsion, from the ages of eight to twenty-three years.

Uses the band, bars, screws, piano-wire springs, plates and combinations of them, according to the case of irregularity presenting.

Always taking impressions of both arches to study the same before deciding what is to be done.

ISRAEL P. WILSON, D.D.S., Burlington, Iowa, "Filling Pulp-Canals of Superior Incisors and Cuspids with Wood Points." This mode was adopted after a series of experiments that convinced me that I could more thoroughly accomplish the work in this way than with any of the other materials in use. But this manner of root-filling requires extreme care as well as all others.

The wood points used are those suggested by Dr. B. Q. Stevens, and are sold by The S. S. White Company in packages of one hundred each. The sizes vary, and can be adapted to any of the root-canals above named. After preparing the canal, a point of proper size is selected by trying one after another until a close-fitting one has been selected, not, however, introducing it fully until ready for the final operations.

A point of proper size will begin to bind when two or three lines from the apex. It is then removed and dipped into beech-wood creasote. Chloro-percha, the consistence of thin cream, being in readiness, is sparingly applied to the walls of the canal, being careful not to fill the canal with the mixture. The wood point is then introduced until it begins to bind, when a few taps with the mallet will send it home to the apex of the root, when it is twisted and broken off, leaving the apical portion solidly filled and the foramen hermetically sealed. A word of caution is here necessary. If the canal is filled with chloro-percha, a tightly-fitting wood point will certainly drive the excess through the foramen, which, to say the least of it, is not desirable.

A safer, and just as effectual a way, is to dip the wood point into chloro-percha and then quickly drive it into the empty canal, when it will be found that the root has been perfectly filled with scarcely a possibility of any excess having been forced through the foramen. And yet enough has been carried down on the end of the point to seal the opening, which nature will, probably, in time cover over with a cemental deposit.

The series of experiments referred to above were made by me several years ago, and have led to my present mode of practice. A young woman of limited means desired her upper teeth extracted and an artificial set inserted. The roots of three incisors—one cuspid, one bicuspid, and the first molar—contained live pulps. In consideration of the sum of five dollars as a credit on her account, the woman submitted to the devitalization of the pulps, and the subsequent filling of the canals in the manner above described, with the understanding that I should extract the roots when the operation was over.

With some compunctions of conscience on my part, the teeth were removed and the results carefully noted. All the roots proved to be satisfactorily filled except two. One of these had a slightly curved root, the foramen of which was not perfectly sealed. The canal of the other was first filled with chloro-percha, after which the wood point was driven into place. A small portion of gutta-percha was found to have been forced through the foramen.

With proper care the failures here reported need not have occurred. While it is exceedingly difficult to follow a curved root, yet it can usually be done. Filling the canal of the other with chloro-percha and then driving in a snugly-fitting wood point could do no other than force the fluid contents of the canal through the foramen.

It may be well to state here that slight pain is sometimes experienced by patients on the introduction of these wood points, which may be occasioned by confined air being forced through the foramen, and thereby producing pressure upon the sensitive tissues surrounding the apex of the root. No harm will result from this intangible irritant, as nature will soon free herself from the gaseous intruder.

I have a few of the specimens of root-fillings referred to above with me, and will place them at the disposal of the members for examination.

CLINTON B. PARKER, D.D.S., 167 Remsen street, Brooklyn, N. Y. "Contour Fillings, using Soft Gold Unannealed." Filled a right superior central incisor, cavity involving the right mesial surface from gum to lower third of crown; also a portion of lingual surface, using Rowan's decimal soft gold, unannealed.

W. WOOLSEY, D.D.S., 1162 East Jersey street, Elizabeth, N. J., inserted a contour gold filling with an improved pneumatic mallet, and air-pumps, using soft foil and finishing with cohesive rolled gold, 60 to 120, with smooth mallet-points.

Dr. BEVERLY O'KENNEAR, 150 West 28th street, New York. To satisfactorily prepare a cavity in an artificial tooth, and insert therein a gold filling that shall have the desired artistic effect without unduly weakening the tooth, is not an easy task. It is impossible in many cases to form the cavity in the exact spot that best meets artistic requirements. The margins of the cavity are frequently so shaped—unavoidably so on account of the nature of the material and the tools necessary for use upon it—that the edges of the finished filling present an uneven outline. This and the difficulty of securing reliable retention, and the liability to accident in preparing the cavity and while inserting the filling, has led to the attempt to imitate gold fillings by some process such as those used for fire-gilding upon porcelain and glass.

These difficulties I think I have overcome by the following method: I first form in the tooth, in the desired position, by means of a suitable shaped diamond point, a shallow cavity of the desired shape. (I here refer to the improved diamond points recently advertised in the *Dental Cosmos*,—a copper tool charged with diamond dust. Nos. 1, 6, and 8 I have found particularly useful for this purpose.) It is not necessary that this cavity should be at all deep. The main object of the depression is to secure thick and strong edges for the filling. I should say that one thirty-second of an inch would be amply sufficient. It is desirable that the edges should be sharp, even, well defined, and smoothly finished. The cavity should not have beveled edges; its walls should be as nearly as possible at right angles to the surface of the tooth. This is essential to a neat, artistic operation. A cavity of this kind can be readily formed in positions where it would be difficult to make one of sufficient depth to receive a gold filling inserted in the usual manner.

The cavity thus formed I line with Downie's enamel, mixed with water to a thin, creamy consistence, working it well to the edges. This enamel fuses at a low heat. I have used it simply because it happened to be handy. I presume that any of the recently-introduced glass or porcelain filling-materials, fusing at a low heat, would answer as well. While this is still moist, I place in the cavity a block of the S. S. White crystal mat gold, previously moistened with water, so that it may absorb and sink into the enamel. Sufficient gold should in like manner be added to fill the cavity, and to slightly lap over the edges, lightly pressing it into place. The tooth is now placed in a Downie or other like furnace, and gradually the heat is applied and increased until the enamel is thoroughly fused. This can be accomplished without fusing the gold ; it is essential, indeed, that the texture of the gold should not be impaired by too high a temperature. It is now allowed to slowly cool. The enamel takes firm hold upon the spongy surface of the crystal gold, uniting it strongly to the porcelain tooth. If the filling is a small one, it is now finished by condensing the gold with flat-surfaced instruments, burnishing and polishing with sand-paper disks, felt wheels, etc., in the same way that an ordinary gold filling would be polished. If the filling is large, it is better, before condensing, to pack on to the surface of the gold sufficient of crystal gold or foil (I prefer foil) to give the filling the desired contour.

Dr. H. C. McBRAIR, Middletown, N. Y. "Fusing Porcelain in Electric Furnace." This clinic gave an illustration with his new electric furnace, fusing porcelain with ease and having perfect control of the heat. Owing to the shape of the furnace it is used successfully for crowns, bridges, and full cases ; it may also be used for heating up solder cases.

Dr. JOHN A. DALY, Washington, D. C. "Lining Rubber Plates with Daly's Fine Gold Lining."

This lining is composed entirely of pure gold, the surface of which is smooth or hammered on one side and rough or crystalline on the other. The rough or crystalline surface is produced by electrolysis. This is claimed to be the only all-gold lining ever inserted. During the process of vulcanization the rubber runs around and into the crystals, incorporating itself with the crystal gold in such a way that it is impossible to separate the gold from the rubber by any known means except such as would destroy both the rubber and gold. The lining is of sufficient thickness to last longer than the life of the average plate, and revulcanizing does not affect it in the least.

The finished plate presents a bright, beautiful, clean, smooth surface of pure gold for contact with the mucous membrane of the mouth.

Dr. JOSEPH SPYER, 182 Broadway, New York. "Demonstrate the Spyer Adhesive Plate." This clinic put up a practical case demonstrating his Soft Rubber Dental "Blank," by the use of which there is no necessity of heating the flask, nor of cutting the rubber into small pieces, nor of heating the rubber, nor of its careful manipulation in packing. The Rubber "Blank" was simply placed over the cast in the place occupied by the wax, the two parts of the cast closed together and boiled, pressed, and the case vulcanized. It is claimed that by the use of the "Blank" there is a distinct gain in cleanliness, an instant of time only is required where an hour or more is needed in the process now in vogue, and time and labor are saved in finishing and polishing. By its use also the red or black rubber cannot run into the pink of the gum. The Soft Rubber Dental "Blanks" are of uniform thickness, and will be made in various sizes and shapes for full and partial cases.

Dr. Spyer also demonstrated on the same case the use of his Adhesive Plate in connection with his Automatic Suction Cavity. By means of the latter a plate can be made smaller than usual and more like a rim plate. The Adhesive Plate it is claimed causes the denture to adhere firmly in any mouth, hard or soft; imparts a soothing sensation to the gums and mucous membrane, and prevents the irritation that arises from the hard rubber pressing upon the gums and roof of the mouth. The plate after coming out of the vulcanizer was uniform; the rubber ran perfectly around the pins and the surface was very smooth, showing that there was very little finishing up to be done, and the case was very satisfactory in all respects.

Dr. HENRY W. GILLETT, Newport, R. I. "Electro-Therapeutics" of obtunding sensitive dentine. Very sensitive corono-mesial cavity in right superior first molar. Applied twenty-five per cent. cocain solution by cataphoresis for thirteen minutes. This benumbed the dentine enough to allow the cavity to be cleaned of decay without pain. The layer of dentine which had been benumbed having been cut through, a second application for a shorter time was made. As a result the retaining gums were cut nearly painlessly.

The operator was seriously handicapped by being obliged to use apparatus with which he was unfamiliar, and a current unsuited to the work.

Dr. JOHN H. MEYER, New York, practically demonstrated the scientific swedgement of metal plates on the plaster cast by the use of shot. This clinic exhibited models showing the scientific swedgement of metal plates to plaster casts. His method is to first swedge the plate upon a zinc die, but the result is found to be inaccurately adapted to plaster casts. This is overcome, and a perfect fit obtained by placing the plate upon the plaster model, burnishing down the edges and imbedding the same in a steel box upon the lower half of which some "mustard-seed" shot is placed. The model is then completely covered with shot, and the upper section of the box forced down upon it with a few blows of a five-pound hammer. The swedging is by this method emphasized, and the ultimate fit of plate absolutely insured. The force for swedging was also demonstrated by the use of a hydraulic press manufactured by A. Stillman, 256 West 43d street, New York.

Dr. John H. Meyer's Preparatory Muffle, Fig. J, and Annealing Ovens, Figs. H and M, can be applied to any dental furnace, but are especially adapted to the "New Revelation Oil Furnace," and form in connection with it a neat, convenient, and practical apparatus, fully satisfying all requirements for baking continuous-gum porcelain inlays, block, crown and bridge work. The preparatory muffle is placed in the elbow of the furnace-pipe and so arranged as to utilize the escaping heat as it passes upward from the furnace and is distributed around the muffle (the heat in this muffle is 1800°). This preparatory muffle has a capacity for five cases, which can be placed in it before the oil is ignited, so that they may be gradually heated up (so important to porcelain), and when the lower muffle has attained the necessary baking heat, these cases may one by one be transferred to it, and when baked, removed therefrom and placed in the asbestos-lined annealing ovens.

In a single muffle furnace but one case at a time can receive attention, and this is exposed at the front of the muffle to the full force of the baking heat, which strikes but one side of the case, while the other is comparatively cool. This unequal heating has a tendency to draw the body and enamel so that a perfect result is not so readily attained. Another great desideratum is, that by the keeping of the muffles constantly closed, with the exception of the brief time required to insert a case (say ten seconds), the overheating of the laboratory is entirely avoided.

It will readily be seen that in hot weather, especially, this is a most decided advantage.

V. H. JACKSON, M.D., D.D.S., New York city, demonstrated with models his method of making appliances for correcting irregularities of the teeth. Dr. Jackson demonstrated this, showing what he terms the Crib System for attachment of the teeth with appliances, showing the most recent appliances, which are made principally of German silver and gold, having discarded piano-wire except for extreme cases.

Also demonstrated methods that he had employed several years previously for moving teeth bodily. Also for the movement of the bone in changing contour of the features. Showing also several recent methods of rotating the teeth by the combination of springs.

P. T. O'REILLY, D.D.S., 272 High street, Holyoke, Mass. "Bridge-work." Dr. O'Reilly demonstrated "bridge-work," the frame of which is gold, with the porcelain teeth cemented in the frame instead of soldered, using no solder whatever; the work being absolutely perfect as far as the bridges were concerned. Should the case break, it can be mended in fifteen minutes without removing the piece of work from the mouth. This method is used in the bicuspids and molar teeth, the method having been brought out by Dr. O'Reilly in the year 1891 at Holyoke, Mass., at the clinic of the Connecticut Valley Dental Association.

WILLIAM P. RICHARDS, D.D.S., Orange, N.J. "Filling Very Frail Teeth by Combining Oxyphosphate, Amalgam, and Gold." This clinic demonstrated the combination of the use of Steurer's plastic gold in connection with amalgam and with all plastic fillings. There were exhibited in connection with this clinic specimens of filled teeth, together with the impression of an intaglio with Steurer's plastic gold.

Dr. S. FREEMAN, 965 Madison avenue, New York city. "Compressed-Air Apparatus, showing its Uses in Mechanical and Operative Dentistry." This clinic demonstrated the use of compressed air in operative and mechanical dentistry.

EDWARD B. DAVIS, D.D.S., Concord, N. H. "Filling Roots with Salol." The salol is applied by the use of warm copper points instead of a warm syringe, and carried to the apex of the root by means of a warm copper point, the point being a root-drier. In large anterior roots it is to be followed with a gutta-percha point, but in small and constricted canals the salol alone is used as above indicated. The salol is prepared by heating in a test-tube, pouring on a cup or piece of marble, and when cold it is broken off; it can be applied to the cavity of the tooth by the aid of warm tweezers, to be followed by the use of hot copper points. It is non-irritating, and where the point of the root is somewhat open, the amount of salol that might go through the end of the root would cause no trouble.

N. H. KEYSER, D.D.S., 18 Mill street, Philadelphia, Pa. "Fusing Gold Fillings in Artificial Teeth." This clinic demonstrated the putting of a gold filling into a tooth without a drilling of the cavity, thus avoiding the weakening of the tooth itself. This is done by the use of sponge gold and loose fusing enamel. When the enamel is fused the sponge gold is thoroughly incorporated with it, then the filling can be finished off with annealed gold, thus making a hard filling.

Dr. L. E. CUSTER, Dayton, Ohio. "Fusing Continuous-Gum with Electric Furnace." This demonstrates the method of fusing porcelain by means of electric ovens.

CHAS. P. LENNOX, D.D.S., Toronto, Ontario, Can., extirpated, using an anesthetic, filled root at once, and cavity, using matrices to facilitate the operation, or "Will take two bicuspids, cut off crown, extirpate pulp (as above), make gold seamless crown, using my crown dies, and adjust at once," or "Will extract, using my anesthetic."

This clinic demonstrated the making of the seamless gold crown. The method pursued is this : a disk of gold is taken, put through a series of holes in a die plate until the cup is formed, and it is then contoured by the use of moist cotton batting and punches.

GEORGE C. AINSWORTH, D.D.S., "The Guilford," Clarendon street, corner Newbury, Boston, Mass. "Treatment for Compound Bicuspids and Molar Cavities in the way of Contour Gold Fillings made up largely of Soft (but not absolutely non-cohesive) Gold." This was illustrated by the filling of a large compound cavity in the bicuspid, using a steel matrix held in position by a Perry separator, making the bulk of the filling with very soft-working gold, packed by hand-pressure, and finishing the crowning surface with cohesive gold packed with pneumatic mallet. Restored to natural contour, as a rule, in practice.

CHARLES C. LINTON, B.S., D.D.S., 65 West 126th street, New York city. "Filling approximal cavities with gold by using the diamond-pointed instruments and soft unannealed gold in connection with the cohesive gold for contouring." This clinic demonstrated the use of diamond-pointed instruments on soft unannealed gold in filling the cavity, until the cavity is about half filled. It is claimed that it is less annoying to the patient to have it packed by these instruments than by the automatic mallet. Then a serrated plugger is used to pack in the undercut, using small pieces of cohesive gold. The contour is then finished by an automatic hand-plugger, then the filling is burnished down and finished in the ordinary manner.

Dr. **Flagg** gave a napkin clinic, demonstrating the possibility of maintenance in position and general practical utility in cases of ordinary filling, and especially in the using of the plastic materials.

Dr. **William T. Wyckoff**, of Philadelphia, Pa., extracted with his non-secret local obtunder for two patients, twice for one patient the same afternoon, several teeth, without pain.

SECOND DAY—EVENING SESSION.

At eight o'clock P.M. the President called the meeting to order, and the Secretary called the roll.

The **President**. The first paper this evening will be read by Dr. F. Milton Smith, and it gives me great pleasure to introduce to you Dr. F. Milton Smith, of New York city. (Loud applause.)

Dr. **Smith**. Mr. Chairman and Gentlemen: The subject chosen for my paper is "Less Crown-Work and More Good Fillings." It seems to me that we do always need new things, but sometimes require our attention to be called to the old things; and if you find nothing specially new in my paper to-night you will pardon it on the ground that perhaps some of us may have forgotten, as it seems to me, some of the things we once knew, and need our attention called to the subject again.

The **President**. I now have very great pleasure in introducing to you Professor A. E. Woolf, of New York city.

Professor **Woolf** then delivered the following lecture, his subject being: "General utilization of the electrolytical system for the decomposition of a chlorid solution. What has been accomplished by this system? Its application to the treatment of germs and diseases caused by germs. The difference in the action of coagulants and non-coagulants on organic matter and lower form of germ-life. Illustrations showing the difference in the action of various disinfectants and the decomposing action of electrozone, by the use of the stereopticon."

In accepting the invitation to meet the New Jersey Dental Society, I had no idea of being called on to face an audience such as I find here this evening. Had I known I was to have an assemblage of this magnitude, I would have prepared a more elaborate entertainment.

I assure you I appreciate your presence, and even though I carry out my original idea of having a little chat with a few friends, I will endeavor to entertain those who are interested in the discussion of the enemy of the human being,—the disease-germ,—ever holding itself in readiness to pounce upon us and feed upon our very vitals.

We are rapidly learning more and more about the germ life, its nature, growth, and habits, and if we can find a means of meeting and conquering the enemy, we will be in the road to treat diseases successfully, with the more modern idea of removing the cause and relying upon nature to do the rest. To do this we need a potent germicide, and should we be able to place one at your disposal, even though we receive no other recognition, the satisfaction of knowing that we have eased pain and diminished suffering would be sufficient reward for a life of labor.

We propose, to-night, to discuss the electrical disinfectant, a product of electricity made from sea-water by electrolysis.

In sea-water we find the chlorids of sodium, magnesium, and potassium, traces of iodin, bromin, and almost every element known to nature ; the electrical decomposition forming the well-known valuable hypochlorites and other properties desirable for disinfection. The combination of gases obtained in this manner make a most potent germicide.

The action of the electrical disinfectant is as follows :

In the presence of organic matter, such as bacteria, chlorin is set free from the hypochlorites. This chlorin seizes upon the hydrogen of the organic matter, thus destroying all germs ; three atoms of oxygen or ozone is formed, which oxidizes and disintegrates the remaining portion of the organic matter.

Exception has been taken by a Boston savant to the use of the name electrozone. As the disinfectant is a product of electricity, and the oxidizing agent is ozone, I fail to see a more appropriate name. I fear this same critic would object to speaking of a tailor-made suit if no tailor were in it, and I believe he would wait to perform the Cæsarian operation till a Cæsar had arrived.

The work accomplished by this electrical disinfectant has been of some magnitude.

It destroyed the germs in the Croton water when the Soudan reservoir was first opened in 1893. Eighty-five million gallons per day were purified by it.

The pest hole at the foot of Canal street, New York, was purified by it. Riker's Island, a mass of putrescence, was permanently disinfected. Here were thirty acres of decomposing mass so foul that when the wind blew from that direction the fetid odor could be detected two or three miles away. Fermentation was so pronounced that when you would walk on the island, smoke would rise wherever your foot broke the crust. The island was treated with electrozone and permanently disinfected,—so completely that only a few weeks ago the plant was sold, as there was no further use for it there. In the history of disinfection there is no record of any attempt to accomplish what was successfully performed at Riker's Island. In Cuba, the Board of Health have written acknowledging its value in yellow fever treatment, and many other cases might be cited where the dreadful germ has been exterminated in large operations. Its germicidal properties cannot be better told than by reciting the experience of three noted bacteriologists compared with what is considered the best for practical work,—bichlorid of mercury; while it took forty-eight hours to treat the anthrax spore so that no cultures could be bred, it took from fifteen to thirty minutes to perform the same work with electrozone. Besides its superior antiseptic properties, it is also absolutely non-poisonous and harmless, while the others are more or less poisonous. To show its harmless quality, I will take this bottle with which I will perform my experiments and drink some (here the lecturer poured out one-half glass of electrozone and drank it). I have been doing this for a year and a half, and I find no ill effects, unless the increase of weight and gain of flesh should be due to its effect. In cases of inflammation, its effect is almost instant, and no doubt due to its valuable antiseptic action. Unlike other disinfectants and antiseptics, electrozone is not a coagulant. It decomposes the organic matter with which it comes in contact, while bichlorid of mercury, carbolic acid, and sulfurous acid are coagulants and cannot be considered true disinfectants, particularly for use on spore-germs, unless used under certain conditions, which cannot in most cases be complied with.

On the other hand, electrozone decomposes—disintegrates the germ. The action of ozone, which oxidizes the organic matter, cannot be better described than when I tell you that concentrated acids passed through a rubber tube would not affect the rubber, while ozone passed through would almost instantly disintegrate the rubber.

I think the value of disinfectants called coagulants is much overrated by the profession, and it will not be long, in my opinion, before they will be more or less discarded.

The confidence with which bichlorid of mercury and carbolic acid are utilized by the medical profession as antiseptics and disinfectants is to a certain extent misplaced, and more study should be given to this most important subject. I had occasion to look thoroughly into this subject in taking an active part in a discussion recently, and I found many reliable authorities who did not place implicit confidence in the value of coagulants as disinfectants and germicides. I trust the subject is sufficiently interesting to you all, and that it will not be out of place for me to read a few extracts taken from books which I had at hand when preparing my notes.

In the work on bacteriology by Edgar M. Crookshank, Professor of Comparative Pathology and Bacteriology and Fellow of King's College, London, and Lecturer on Bacteriology, Royal Veterinary College, London, he says in Chapter IX, under the heading "Antiseptics and Disinfectants :"

> "Herroun considers that the value of mercuric chlorid as an antiseptic is much overrated, as he has cultivated ordinary septic bacteria in albuminous filtrates containing 1 to 2000. It is precipitated by albumins if used of greater strength, and is readily converted by the sulfur of albuminous bodies into mercuric sulfid, a compound which has practically no antiseptic properties."

Sternberg has also made an elaborate series of experiments with regard to the action of germicides. In this case cultivations of well-known pathogenic organisms in liquid media were employed. The supposed germicide was added to the liquid cultivation, and after two hours a fresh flask of sterilized culture was inoculated from the disinfected cultivation and placed in the incubator. In twenty-four to forty-eight hours, if the chemicals were not efficient, there was evidence of a growth of bacteria.

I find in Sternberg, edition of 1892, page 183, the following statement :

> "In experiments upon tuberculous sputum, Schill and Fischer found that

exposure of fresh sputum to an equal amount of 1–2000 solution for twenty-four hours failed to disinfect it, as shown by inoculation experiments in guinea pigs."

I quote also from Sternberg on page 191:

"Koch found a one per cent. solution to be without effect after fifteen days' exposure in testing upon the anthrax spore; a two per cent. solution retarded development, but did not completely destroy vitality in seven days; a three per cent. solution was effective in two days."

This verifies Dr. Bissell.

In the "Principles of Bacteriology" by A. C. Abbott, an acknowledged authority, formerly a bacteriologist at Johns Hopkins University, now Professor in the University of Pennsylvania, I find in the 1892 edition the following statement, page 49:

"In the reaction that is seen to take place between the salts of mercury and albuminous bodies, there results a third compound which has neither the characteristics of mercury nor of albumin, but partakes of the peculiarities of both; it is a combination of albumin and mercury known by the indefinite term, 'albuminate of mercury.'

"Some such reaction as this occurs when the soluble salts of mercury are brought in contact with bacteria. This view has recently been strengthened by the experiments of Geppert, in which the reaction was caused to take place between the spores of the anthrax bacillus and mercuric chlorid, the result being the apparent destruction of the living properties of the spores by the formation of this third compound. In these experiments it was shown that though this combination had taken place, still it did not of necessity imply the complete death of the protoplasm of the spores, for if by proper means the combination of mercury with their protoplasm was broken up, many of the spores returned from their condition of apparent death to that of life, with all their previous disease-producing and cultural peculiarities. Geppert employed a solution of ammonium sulfid for the purpose of destroying the combination of spore-protoplasm and mercury. The mercury was precipitated from the protoplasm as an insoluble sulfid, and the protoplasm of the spores returned to its original condition.

"These and other somewhat similar experiments have given an entirely new impulse to the study of disinfectants, and in the light shed by them many of our previously formed ideas concerning the action of disinfecting agents must be modified."

Page 51:

"The reaction between these organic salts and albuminous bodies is not a selective action; they combine in most instances with any or all protoplasmic bodies present. For this reason the efficiency of the practical application of many of the commonly-employed disinfectants is a matter of grave doubt. For example, the disinfection of excreta, sputum, or blood containing pathogenic organisms, by means of corrosive sublimate, is a procedure of very questionable success. The amount of sublimate employed may be entirely used up and rendered inactive as a disinfectant by the ordinary protoplasmic substance present, without having any appreciable effect upon the bacteria which may be in the mass.

"The remarks are introduced in order to guard against the implicit confidence so often placed in the disinfecting value of corrosive sublimate. In bacteriological laboratories, where there is constantly more or less of infectious materials, it is the custom, with a few exceptions, to have vessels containing solutions of corrosive sublimate at hand by which infectious materials may be rendered harmless. The value of this procedure, as we have just learned, is more or less questionable, especially in those cases in which the substance to be disinfected is of an albuminous nature.

"With the introduction of such substances the sublimate solution of mercury is quickly precipitated by the albumin, and its disinfecting properties may be entirely destroyed. We may, in a very short time, have little else than water containing a precipitate of albumin and mercury, in so far as its value as a disinfectant is concerned."

Concerning the value of sulfurous acid in experiments made by the New York Board of Health, conducted by Dr. Bebee under the direction of Dr. H. M. Biggs, I find in the official report of 1892 the following statement:

"Anhydrous sulfurous acid is not a germicide for anthrax spores. Moist sulfurous acid gas is an efficient germicide for staphylococcus pyogenes aureus. It is apparently not a germicide for spore-bearing anthrax."

I might cite other authorities here in support of my claims, but I have mentioned only those cases which I had conveniently at hand at the time of reference.

No later than February, I think, in conversation with the well-known bacteriologist, Dr. Shakespeare, and also Dr. Keyser, of Philadelphia, they both indorsed my statement that bichlorid of mercury, carbolic acid, and sulfurous acid were not true disinfectants, and were only disinfectants under certain conditions. The gentleman referred to informed me that Professor Laplace, of the Medico-Chirurgical College, had discarded the use of bichlorid of mercury unless used with the addition of some acid to prevent coagulation. They likewise told me that Dr. A. C. Abbott, of the University of Pennsylvania, also shares the same sentiments as to the value of disinfectants known as coagulants. This is verified by extracts from the works of A. C. Abbott, incorporated in what I have already read. I might also include here a portion of a letter received by me from Dr. Abbott, which states,—

"In order to determine the exact power of a substance to destroy bacteria, many surrounding conditions must be taken into the calculation, such for example as the nature of the mass in which the infected bacteria are located, the temperature at which the test is made, the possible number of bacteria in a given bulk of the mass, etc. Of course these factors cannot be considered in practice, and for that reason the rough and ready use of metallic salts for general purposes is hardly to be considered a reliable means of disinfection."

In Dr. Abbott's pamphlet on corrosive sublimate as a disinfectant, after starting a series of experiments, he makes the following statement:

"In the light of these experiments and those of the experimenters quoted in this paper, it is plain that for use in surgical practice the solutions of corrosive sublimate do not possess all of the advantages hitherto attributed to them."

In the finale of this paper, in speaking of corrosive sublimate, Dr. Abbott says,—

"As we have seen, its action is influenced by a number of conditions which in practical application it is difficult, if not quite impossible to control.

"For these reasons we seem hardly justified in continuing to give it the first place in the list of substances which may be employed practically for the purpose of rendering harmless materials containing the germs of infectious maladies."

Dr. Ernest Laplace, Dean of the Medico-Chirurgical College, Philadelphia, writes to me:

"In answer to your note inquiring as to the disinfecting properties of sublimate, let me say that the information you have gathered from the authors you mention is correct, and that the only solution of sublimate or carbolic acid at all able to disinfect is the acid sublimate solution as originated and described by myself in 1887, which you will find in the *Deutsche Medicinsche Wochenschrift*, 1887.

"The formula consists of one part of sublimate, five of hydrochloric or sulfuric acid, to 1000 parts of water.

"The acidity of the solution intensifies its action and prevents the coagulation of the aluminoids by the chemical. The action of the disinfectant is thus preserved. The same principle applied to carbolic acid solutions."

We here see that some of the best authorities to be consulted verify the statement previously made, that bichlorid of mercury, carbolic acid, and sulfurous acids are not *true* disinfectants unless used under conditions which are not always practical, and this fact, if no other, would rule them out in many cases.

I have prepared a few stereopticon exhibits by which I hope to show you the difference between the action of coagulants and electrozone on organic matter. I brought some infusoria—low forms of animal life—which I intended throwing upon the screen, but the air of Asbury Park was not as welcome to them as it is to us; they rebelled, and it is supposed died in rage. I hope, however, there are a few left, and we will now see if we can find sufficient to show on the screen.

(Here the lecturer gave directions to his assistant to try the decomposed water upon the screen from the stereopticon, and although there was indication of life, it was not sufficient to satisfy the requirements of the lecturer.)

It is as I feared. We will, however, show you the rapidity of the action of electrozone on organic coloring.

(Here the lecturer caused to be thrown from the stereopticon on the screen four tubes containing a red coloring matter. He treated three of the tubes respectively with bichlorid of mercury, carbolic acid, and sulfurous acid, with no apparent action. He ordered two drops of electrozone to be added to the fourth tube, when the organic matter was decomposed and became clear and white.) (Applause.)

The lecturer then continued:

If scientists are correct when they tell you that all germs are more or less albuminous—if we take the albumin of white of egg and treat it with the various disinfectants,—we will get an idea of the action on germ life.

Taking the cholera germ, for example, and figuring that ten thousand placed side by side would go through the eye of a needle, from the mass of albumin we propose to act upon we may imagine how many million colonies of germs we are treating.

(Here the lecturer caused to be thrown on the screen the reflection of four tubes filled about one-eighth with albumin. Into the first tube the lecturer ordered carbolic acid. When the albumin became dark it was agitated, and became opaque and black.)

You will see (said the lecturer) the albumin is surrounded with a coagulated coating, through which the light cannot pass. This gives the reflection the black appearance on the screen.

(In the second tube bichlorid of mercury was added to the albumin, with the same result and appearance as was obtained from carbolic acid.)

The lecturer said:

You will observe the action is the same as before, both belonging to the class of coagulants.

We will next observe the action of sulfurous acid is the same, also, but less rapid. I would state, where the gas is obtained by the burning of sulfur, the gas is absolutely without effect unless moisture is present.

(Here sulfuric acid gas in liquid solution was added to the third tube, and slowly the albumin in the tube assumed the appearance of that in the other tubes.)

The lecturer said:

To the fourth tube we now place electrozone. Kindly observe the color now is white. As we decompose the albumin, the carbon compounds will give the liquid in the tube a yellowish tint. See, it already commences to assume a yellowish color; and notice the gas-bubbles rising, which show conclusively the decomposition of the albumin. The gases are now rising rapidly, showing the rapid action of the electrozone. We will now agitate all the tubes. Please notice that no decomposition or gases are present in any of the other tubes,—merely the albumin protected by the exterior coagulated coating,—while the electrozone tears the albumin to pieces and disintegrates every portion.

(The four tubes were here violently agitated, and no alteration appeared in any of the first three tubes; in the fourth, in which electrozone was added, showers of gas-bubbles filled the tube; when the agitation ceased the albumin had all disappeared and the liquid had assumed a deep yellow, transparent tint.) (Applause.)

The lecturer continued:

With what we have seen and the investigation we have followed to-night, and the time devoted to antiseptics, if we have brought any comfort to the distressed and suffering we will feel we are well recompensed, and in a small way performed

"Man's duty to man."

(Applause was loud and long continued.)

President Holbrook. Professor Woolf is ready to answer any questions that may be asked by any of the audience.

Dr. Abbott. The professor has been kind enough to say to us that bichlorid solutions coagulate, and he has shown experiments which seem to carry out the idea very fully. The professor also said to us that the reason why none of the coagulants were germicides was because they coagulate a mass of material around which organisms gather, and that the organism after that is susceptible, if put in proper media, of rejuvenating or growing and multiplying, and so forth. I would like to ask the question how it is possible for the organism to get out of that coagulated albumin.

Professor **Woolf.** Dr. Abbott apparently misunderstood a part of my remarks, but is entirely right as to another part.

I did not say, and I was very particular not to say, that they were not germicides in all instances. I said in the case of spore-germs, and if all conditions were not correct; also if the germ should be surrounded by any amount of albuminous matter, such, for instance, as the expectoration of a consumptive. I likewise stated, or intended to say, that some spores would not be attacked if they were not surrounded by albuminous matter, except under certain conditions.

Now I will take for example the anthrax spore; if that were treated with bichlorid of mercury, it would take about forty-eight hours to permanently kill it. It would be difficult to practically apply the disinfectant for forty-eight hours except in the laboratory. Where partial coagulation takes place in a dry atmosphere, disintegration follows, and when the coagulation had disintegrated the spore would again propagate.

There was a case in point some time since where they had an epidemic at Bellevue Hospital, and they washed the ward with bichlorid of mercury. The epidemic ceased, and they thought they were rid of it. I forget what the epidemic was, but at the end of four or five months it broke out again, and they were looking for the cause, little dreaming that they had only coagulated the germ. The coagulation had disintegrated, the germ had come back again, and committed its depredations. (Applause.) I would state that they afterward used chlorin.

Dr. **Jones.** Can you explain the process of the disintegration of the albumin?

Professor **Woolf.** The process? I would say that it becomes deprived of its moisture. The coagulated coating has a certain percentage of moisture in it; the moisture having evaporated, the parts are not held together, and the disintegration takes place.

Dr. **Allen.** What would be the effect on the pulp which would be contained in the diseased tube?

Professor **Woolf.** I would say that the action would be almost identical as in the case of albumin; that is, the splitting up of the hypochlorites, the chlorin seizing on whatever hydrogen would be contained in the spores on account of the affinity of the chlorin for hydrogen, and then the destruction by its being deprived of one of its elements. Then follows the disintegration by oxidation.

I have never made extended chemical analysis, and cannot tell what would be the exact chemical action. The physical action would be the decomposition.

The **President**. If there are no further questions, we will proceed and the paper will be passed.

Professor **Woolf**. Allow me to thank the audience for their very kind attention. (Loud applause.)

President **Holbrook**. I now have the pleasure of introducing to you Louis Ottofy, D.D.S., of Chicago, Ill., who will read a paper upon "The Preservation of Deciduous Teeth by Means of Gold or Platinum Crowns."

THE PRESERVATION OF THE DECIDUOUS TEETH BY MEANS OF CAPS AND CROWNS.

The preservation of the deciduous teeth is a subject which presents many difficulties, and for some years past it has been the aim of some of the most conscientious members of the profession to overcome some of these difficulties and to lessen the necessity for the premature removal of these teeth. It is generally conceded that no material improvement in the general structure of the teeth in the human race can take place so long as extraction is one of the most frequent operations resorted to in the treatment of either the temporary or the permanent teeth. There is little question regarding the fact that the present generally bad condition of the teeth is due in a great measure to the neglected condition of the teeth in past generations. From a dento-physical standpoint, the people of to-day are badly demoralized. It seems hardly necessary to refer at length, before this Society, to the importance of saving the deciduous teeth until the exact time when by the operation of nature they should be shed. We generally lose sight of the moral influences that are exerted, when the practice of saving the teeth is commenced early in youth. The impressions of early life are apt to be the controlling influences of the adult, and it seems to me that a habit to save could be more easily inculcated than a habit to have teeth extracted. But the principal thing is the opportunity offered to educate the youthful patient, to form early the habit of care and watchfulness over organs whose importance is at this age generally underrated. The profession of to-day can leave no greater heritage to those of the next generation than the one which has for its aim the education of the children in every sense.

We cannot begin too early in life, and if half the attention were given by the dentist to each case of the child that is given under similar circumstances to an adult, much could be accomplished. As it is, children are often turned away with the comment, "It's only a child." Every one realizes that it is much more difficult to treat children successfully than it is to treat the grown ; that the operation performed under these difficulties is not always as successful, and hence the difficulties are too frequently met by the forceps. It is the dental profession, and not the laity, who is responsible for the generally accepted idea that children's teeth cannot be filled, or that they should not be filled, and I think it is time that the profession remedy the error of which it is the sponsor.

The same treatment which will save permanent teeth will not always save the deciduous teeth ; the conditions are so different that if the operator has not the time or the ability, he will meet it by extraction. It should be placed, however, to the credit of the profession that some of its members early realized the baneful effects of this kind of practice, and that during the past fifty years many crude and unsatisfactory methods of saving these organs have been more or less practiced by them. In this way the practice to destroy the pulp and leave the tooth first originated ; this was improved upon by capping the pulp with some devitalizing agent, then filling the cavity and drilling a vent-hole for the escape of gases which might originate. Crude as these practices were, they began to prove that the importance of saving these teeth had been recognized. The practice of bridging across with plastic fillings from one cavity into another in the case of approximal cavities was resorted to, when the difficulty of retaining fillings in these small teeth was recognized. In short, there is no one here who considers the handling of these cases a pleasant part of their practice.

As a result of the necessity for frequent refillings, each time causing a little more pain and cutting away a little more of the tooth, and for the purpose of overcoming the many unsanitary and unwholesome practices resorted to, I have conceived the idea of saving the deciduous teeth by means of crowns and jackets,—a practice which from its simplicity, ease, and permanence is strange not to have been long since recommended. It is about a year ago that I first performed the operation, and I have since then continued it with perfect satisfaction.

In the case of incisors and cuspids of children, it is difficult, as a rule, to introduce a satisfactory filling, especially at so early an age as two or two and a half years. In the first place, the preparation of cavities is painful, the teeth if carious so early in life are exquisitely sensitive, and the most sympathetically disposed operator's patience is sorely tried in doing something satisfactory; hence in the majority of cases the result is a cement filling, often hastily and improperly mixed, hurriedly introduced, and perhaps permeated with moisture before a protection against it could be applied. The result is a repetition of the operation at short intervals, sorely trying the abilities of endurance of the restless, wriggling piece of humanity, to say nothing of the increased sensibility occasioned by the repeated cutting away of what little tooth-structure there is.

How much simpler it is to remove only the greater portion of decay, slightly separate the tooth from its neighbors by means of a sand-paper, corundum, or diamond disk, and attach one of these jackets, without taking an impression or carefully fitting it, and cementing it into place. The specimens exhibited will prove how simply and crudely these crowns may be made.

For this purpose I use twenty-four or twenty-two carat gold plate, 34 gauge, or platinum 38 gauge. The pattern is cut out as indicated by the specimen exhibited; it is bent with pliers, pressed with the fingers around the neck of the tooth, and the edges caught with a mite of solder and cemented into place. Fortunately the deciduous teeth are generally more regular, not so closely in contact, less variable in size in different individuals, than the permanent, and are usually of a shape readily adapted for the fitting of these crowns. The articulation quickly accommodates itself to the crown by either the slight displacement of the crowned tooth or of its antagonist. So much of the work is done outside of the mouth, and when done at the chair or within view of the little patient it is a source of amusement and interest instead of dread and pain. I have some of these caps sticking in place, although the restlessness of the little patients required haste in fitting and attachment.

I have never taken kindly to the method of filling deciduous teeth by bridging the filling-material across the interdental space, although I have been forced to practice it for want of any better means of retaining the fillings in place. In the case of the molars, therefore, this practice offers many advantages. Usually it is better to take an impression in wax, modelling compound, or Melotte's clay than with the Melotte outfit. Dies and counter-dies are quickly made and a cap struck up. Frequently there is no necessity of shaping the crown, as usually it is unnecessary to extend the cap down on the crown, except for a short distance. It is sufficient if it extends far enough so as to hold it in place. Its purpose is merely to serve as a protection to the underlying cement. It is remarkable with what tenacity these caps will adhere even in cases where it has been impossible to prevent the moisture from coming in contact with the cement before it has set. For these jackets or half-crowns I find pure gold most satisfactory. In the specimens shown, several methods of making them are illustrated.

I am very enthusiastic over this means of preserving the deciduous teeth, and have therefore taken some interest in noting what others have done in this line. As far as I have been able to ascertain, the credit for the mention of this practice is due to Dr. W. W. Shryock, of Fort Wayne, Ind., who first exhibited and reported practical cases before the Illinois State Dental Society at the meeting held in May, 1894. As usual, the man who has done this "long ago" comes to the surface, and the following reports have been made :

Transactions of the Illinois State Dental Society at Springfield, May, 1894.

Dr. W. W. Shryock, of Fort Wayne, Ind., exhibited gold crowns on upper incisors of his little girl and boy, which were placed when the children were but two and three years of age respectively.

[These crowns were set February 8, 1893.—W. W. SHRYOCK.]

Dental Cosmos, August, 1894 (Hints, Queries, and Comments).

A NOVEL DENTAL OPERATION.—My son, aged two years, has chalky superior incisors, while the rest of his teeth seem to be of a better quality.

We often see this condition in children's mouths, dilapidated or missing superior incisors long before their permanent successors are ready to erupt, although the rest of the temporary teeth are in fairly good condition.

In this case they were clipped off until the laterals, especially, were nearly even with the gum-margin on the labial aspect. They were getting sensitive, for he kept them more or less protected by his lip and would never use them to bite upon.

I decided to prevent their premature loss if possible. By the use of steel dies I struck up four gold caps, of 34 gauge, soldered joint and cutting-edge to give strength, dried the teeth, and set caps with oxyphosphate cement.

They have now been in position about a month, and from all appearances the operation is a perfect success. The crowns are so small and their shape is so natural that their appearance is not objectionable, especially when compared with their former condition.

The boy no longer avoids biting upon the teeth, nor does he keep them protected from thermal changes; on the contrary, he takes great delight in displaying them to many curious observers. The whole operation of making and setting the caps is by no means difficult, nor is the setting of them painful for the child.

Whether or not this is the first case of the kind on record, I am quite certain that it will not be the last.—W. H. BALDWIN, D.D.S., Norwalk, Conn.

Dental Digest for March, 1895.

A NOVEL DENTAL OPERATION.—In August, 1894, *Dental Cosmos*, under the head of "Hints, Queries, and Comments," Dr. W. H. Baldwin calls attention to the work of gold-crowning deciduous teeth.

My practice in this dates back to February 8, 1893, when the superior central incisors of my son, then four years old, were crowned. This practice has been followed by me ever since, including four crowns for an infant daughter in November, 1893, she then being twenty-three months old.

While attending the Illinois State Dental Association in May last, 1894, by invitation of the chairman of the clinical committee, my children were presented and their crowns commended by members, and the belief expressed that this was the first of its kind on record.

This method of treating deciduous teeth must prove of vast advantage in durability and relief from pain.—W. W. SHRYOCK.

Dental Digest for May, 1895.

THE CROWNING OF DECIDUOUS TEETH.—To the Editor of the Dental Digest. Dear Sir,—Under the head of "A Novel Dental Operation," you quote from "Hints and Queries" in *Dental Cosmos* of August, 1894, in which Dr. W. H. Baldwin calls attention to the crowning of deciduous teeth with gold.

In 1889, when my youngest son was but two and one-half years old, his centrals and laterals were so much decayed that it was an impossibility to fill them with any substance that would be protective in its nature.

The idea occurred to me to crown them with gold, which I did very easily, and the child wore them in comfort until the permanent incisors appeared. I have since in many cases used the same method, and find it very serviceable, although not very artistic.—WM. G. CUMMINS.

I believe in cases of this kind credit is due to the man who is first on record. I give no credence to the subsequent reports, and no one can claim priority in that manner. At any rate, if a mode of practice which is satisfactory, saves pain to the patient, gives comfort and saves the nervous system and energy of the dentist, is hidden under the bushel, the claimant should be barred from recognition.

I heartily commend this additional means of preserving the deciduous teeth to your favorable consideration.

The PRESIDENT. What is your pleasure, gentlemen? This paper is open for discussion.

There was no response.

The PRESIDENT. If there is no discussion to be had on this paper, as it is very late, a motion to adjourn will be in order.

On motion, adjourned until Saturday, August 3, 1895, at 10 o'clock A.M.

THIRD DAY—MORNING SESSION.

The meeting was called to order by the President at ten o'clock A.M., and the Secretary called the roll.

The President announced the following Committee to investigate the charges at dental colleges: Drs. J. A. Osmun, G. E. Adams, F. C. Barlow, C. A. Meeker, and H. S. Sutphen.

To report on the feasibility of establishing dental infirmaries, Drs. G. E. Adams; E. M. Beesley, Charles A. Meeker.

The PRESIDENT. Concerning the resolution with regard to the use of anesthetics suggested by the New York Society, the subject was passed by the New Jersey Society in 1893.

Dr. GILLETT. Dr. Watson has asked me to show you a little convenience that I have had made for my own satisfaction, and incidentally for the satisfaction of any one else who would like it. It is an old idea of mine that I got out a patent for some five years ago, and for about six months I have been engaged in persuading the Boston Dental Manufacturing Company to make them in some cheap form. It is in the way of an articulator, and my idea was that we might have a cheap articulator that could be sold for twenty-five or thirty cents, and would save hours of time. I have been trying to persuade the company that they could make them for three dollars a dozen; they say they ought to be thirty cents apiece, and I believe that a man who wants them at all wants them by the dozen. I will just pass around these articulators and the models as they were hastily mounted by my assistant before I left home. (Did so.) Lest any one should misunderstand, I will say that they happen to be some models that were taken as records of a certain man's results in the extraction of six-year molars.

Vice-President SANGER (in the chair). The next subject before us consists of a series of topics, submitted by the American Dental Association, for general discussions at the various dental meetings.

The first of these topics is as follows:

"Can alveolar dental abscesses arise after complete sterilization and obliteration of the canal by an impervious filling, and if so, from what cause?"

Gentlemen, this is a prolific subject, and ought to excite general interesting discussion, and I sincerely hope that none of you will be backward in speaking on this question. The matter is now open for discussion.

Dr. Head, will you begin the discussion on this subject?

Dr. HEAD, of Philadelphia. This subject is a very interesting one, and of great importance to the entire dental profession.

Whenever an abscess may arise in the tissue, the first thought that comes to the practitioner is that there was not complete sterilization. So the question is reduced somewhat to a theoretical proposition rather than a practical one, because it will be impossible to ever test such a case in the mouth for proof that there was perfect sterilization. Of course the cause of the abscess is a place in the canal where the fluids may ferment, bacteria may grow, and an abscess be thus produced; but this particular and common irritant being excluded, and we have a tooth entirely surrounded by the living tissue with no receptacle for such irritant. Practically I should say that no true abscess, such as we would generally consider an abscess, could form, but something that might approximate to an abscess would be quite possible. An abscess could only arise from inflammation caused by an irritant, and if there be no irritant there, we will all admit at once that no abscess could possibly exist. Outside of the irritation caused by fermentation or growth of germs in an individual portion of the dental canal, there can be two principal causes,—the formation of salts around the base of that tooth, or perhaps the presence of some germ. I wish to disclaim any assertion that there is such a germ, but I have heard it spoken of, and therefore we might say, throwing out that germ entirely, the two causes that might produce an abscess would be the formation of limestone as an irritant and the absorption of the tooth, which might irritate all the tissues around the tooth when bitten upon, and cause a flow of pus which would gradually work its way into the side of a tooth and cause an ordinary abscess in the mouth. But, irrespective of salts deposited on the teeth, or absorption, it seems to me that an abscess in the ordinary acceptation of the term, under the condition stated, is impossible.

Dr. WINKLER, of New York. I do not believe, sir, that the conditions stated are possible. I do not believe, sir, that it is possible to render a tooth absolutely aseptic, to fill it absolutely and perfectly to the apex of the root with a filling-material that is absolutely impervious to moisture. I think we come pretty near those conditions in the majority of cases, but I do not think those conditions are possible of attainment. One of the most perfect methods of filling the roots of the tooth and coming the nearest to the fulfillment of these conditions is where the root has been thoroughly cleaned out through the apex, rendered aseptic and filled thoroughly. Alveolotomy is then performed, and the apex of the root is cleared of any protruding portion of the filling. This is an operation that is very valuable in my opinion, but I think it one which ought not to be resorted to unless really necessary. If disease occurs in the end of a root which has been treated and filled and remains healthy and normal for a number of years, it is because those conditions have not been carried out. I have seen teeth where the failure of getting to the apex with the antiseptic and solid filling has caused serious trouble thereafter. I was discussing the subject with Dr. Abbott last night, and I believe with him that possibly the renewal of trouble or soreness is due to ptomaines of decomposition. The fillings that we put there after the root has been cleaned to the apex are more or less porous; we do not get impervious filling there, and I do not believe we can. I believe that this condition arises from the porosity of the filling which results in the formation of ptomaines or poisons, but I do not believe the conditions as laid down in the question are possible.

Dr. REGISTER. I do not believe that I can throw much light upon this subject, although it is one upon which I have given considerable thought.

One of our great troubles in practice is that we resort too much to methods rather than to principles. In considering the ground of preventing alveolar abscesses forming in a pulpless tooth, we have to consider what it is that leads up to that result. In all morbid or altered physical local conditions, we also have sympathetically altered physical relations in the system at large; nature endeavoring to repair or repel. In the circulation of the blood we have the white leucocytes or the white corpuscles, and the red corpuscles, which are the carriers of oxygen.

In the old books on physiology we find that the white corpuscles were looked upon as enemies, but now they are regarded as friends, for they are the carriers of the nutrient matter to the system at large; and when we have an accident of any kind, the white corpuscles are telegraphed for and go in great excess to the part, standing in the relation of six to seven hundred white corpuscles to one of red. The leucocytes in their circulation pass into the pulp in large numbers, and being able to multiply upon themselves in furnishing protoplasm, it is in relation as they pass in and out after that we are able to satisfy nutrition and save exposed pulps. This, however, carries us into another field. Speaking strictly to the subject in hand, we do not extend ourselves sufficiently over the territory involved. If we are so particular, and properly so, about removing every particle of pulp in the canal itself, why should we do away with that immensely large territory of the basis-substance which is not only filled with dead fibrilla, which remains there in large quantities, but also a reticulated matrix ramifying in all parts of the dentine?

My idea, both from practice and theory, and from the eating of my pudding which has proved good, is that by dehydration or dissection, which you please, of the basis-substance, we are able to get at all the animal matter as fibrilla, etc., the carbonaceous matter if time has so changed it which resides in the dentine after the pulp has been removed and so render its tubulated structure as a whole inert, by the replacement of some unchangeable medicament. The pulp is only a part of the trouble, because if the carbonaceous matter, which is the fibrilla, and reticulum, or, in other words, the fleshy part of the basis-substance of the tooth is allowed to remain, you have decomposition going on which is just as likely to pass by endosmotic action into the pericementum as any part of the pulp remaining near the apical foramen of the pulp-chamber itself; therefore which can be done by solvents in a dry dentine and place it in a condition where the least possible change can take place,—the consequence is that the circulation is very smoothly re-established in the pericementum. The leucocytes of repair which invariably follow any morbid or deranged part fall back into normal condition after supplying the nutrient matter which is required for that part. The consequence is that the irritation ceases and you have a condition which is subnormal, because having taken away the inner life and the basis-substance being put into an absolutely neutral or sterilized condition, it remains inert for a time; this length of time depending upon the unchangeable condition of the basic salts of the tooth, this and the continuance of the individual in health. Now, while it is in this dry condition, if it be closed with some medicinal agent, something on the order of salicylic acid, which is a volatile oil found in the oil of wintergreen which has the power of suspending animal and vegetable decomposition, and which is the active principle of salol, which remedy can be used either by dissolving it in chloroform, which is its natural solvent,—if you take the dentine while it is in a sterilized condition, after taking out the carbonaceous matter, and saturate it with the above remedy, you put it in a condition so that the chances of any retrograde metamorphosis are reduced to a minimum. The after-treatment of the pulp-chamber can be completed by any of the well-recognized methods in practice.

Dr. BREWSTER. I do not believe that the conditions spoken of can be attained. However, I think that an abscess has just as good a right to locate itself there without any definite reason as it has to form in any other part of the body. Who can tell why an abscess forms in the brain, or in the lumbar region of the back? Who can give any good cause for that; and why has not an abscess as good a right to form at the apex of the tooth as anywhere else? There are several good reasons why an abscess could either form there or anywhere else in the body, and I do not believe that the conditions given forth in the proposition can be brought about.

Vice-President SANGER. Will any other gentleman speak on this subject? if not, we will pass it.

There is one other proposition I want to bring before this Society, because it seems to be so closely allied with the matter we have just had under discussion. It is the third question on the list, and it is this: "What is the most satisfactory antiseptic and best method of root-canal sterilization?"

We are all practicing root-canal sterilization, and I have no doubt each one of you has his own idea on the subject, and I hope you will discuss it vigorously.

Will Dr. Crawford please open the discussion?

Dr. CRAWFORD. Mr. President and Gentlemen: I like a definite statement of any practical question which presents itself to us in every-day practice, and I like to hear this question dealt with in a rational manner. One of the troubles in our profession is that in the process of development and study we are often inclined to forget good things and take hold of something which seems more fascinating.

To express myself more definitely upon this point, we, as a profession, are inclined to ignore and lay aside truths that have existed for a long time, truths that have been practiced by our predecessors, and take up something which is more attractive for the time being, which has not as a basis, truth. In fact, gentlemen, scientific facts are simply truths and common sense made exact.

I believe that in the process of sterilization in the canals of teeth, as in other portions of our organization, there resides in the physical economy in a normal condition, germicidal influences. I believe that many of the conditions of sterilization at the ends of roots of teeth have become contaminated by the presence of micro-organisms, which is the most plausible theory to my mind. I believe that residing in the body itself there is found a more potent and efficient agent to accomplish the effect of sterilization than the application of medicine, or even surgical procedure in many cases. The thorough cleansing and washing of the canal is sufficient, avoiding the use of instruments which might obstruct nature's work. The only effect of the opening is to convert the tooth into a drainage-tube, maintaining the condition of drainage; after the washing and cleaning, there should be thorough drying of the parts before filling.

The drying of the parts as thoroughly as possible and keeping the patient in as good an atmosphere as possible is very important. Professor Woolf last evening referred to the effect of the atmosphere upon certain life which he had brought here in the fluids that he desired to exhibit microscopically, and his experiments were spoiled because of the death of the animalculi. So we seek, by a proper atmosphere, the same results.

I am sometimes regarded as an old fogy in relation to the filling of teeth, the filling of root-canals; and the details of the operation form the greatest obstacle that we meet with. I do not think it is so important as to the material with which to fill up the canal, as it is to the manner in which you apply it. In a large per cent. of cases I rely upon sterilized wood points for the closing of the end of root, and I have recently added to my sterilized wood points a little roping of Abbey's gold foil and then drive into the canal. In more difficult cases I nearly always introduce what to my mind is the most persistent antiferment, German wood creasote, and then finish the filling with any of the reputable materials which are most convenient.

Dr. STOCKTON, Newark, N. J. Regarding Dr. Head's statement that if this could be done as this question states, there could not be any ulcers, how is it that at the expiration of eight or ten years after the operation, and while the tooth in the mean time has been in a state of perfect quiescence, giving all the peace and comfort that could be asked for, and when it is known that there is no dead pulp there or anything of that kind, all at once there is trouble there?

If the work was done well and there was no absorption in that material, if it remained quiet for six months or six weeks and then gave trouble, why is it?

You would not say that where a thing was perfect in all its parts, and there was no trouble for eight or ten years, and then there should be trouble manifested, that the work was not properly done? Have you any security that this thing can be done successfully? I don't believe it.

That is what I want to say to stir you up and make you mad, and make you all talk about this. I believe the majority of people think it can be done. I do not. The logic is such that you cannot get away from it. If all precautions have been taken to make this a perfect operation, and it has remained quiescent, why at the end of that time should it give trouble, as it often does? There are other elements to be taken into consideration; the health of the patient, perhaps, is one. I have in mind now the case of a lady who has a central incisor that has had the pulp removed; it was done by one of the most successful operators in this country some ten years ago, yet only yesterday she presented herself to me, and she has a great deal of trouble which has been very hard to control. Why? Because her general health is run down. She is not in a condition to meet the strain that is put upon her; and the weak spot gives way first, just as any other weak spot is manifested when your general health is attacked. When the pulp is taken from the tooth, no one can say it is as good a tooth as when the pulp was alive. Just as it might be with the kidneys: they have been in a condition for years which was weak; but as long as the health was good they caused no trouble, but the moment the system runs down the trouble begins, and so it is with the whole system.

It is almost impossible to fulfill the requirements of this question; but if there is any gentleman who is able to do it, the result will be possible, sooner or later, of alveolar abscess.

Dr. WINKLER. I began my remarks, sir, with the statement that the conditions were impossible. Now I am going to state my belief, although, of course, belief does not prove anything, for there are probably a hundred different religious sects, all believing in certain conditions, and each one believing a little differently from the other, and there is no reason why the special views of one shall be especially the truth. But in order to make my statements stronger, I say that I believe that there is not *one* of these conditions that is absolutely possible.

I do not believe, in the first place, that roots can be rendered absolutely septic, because the bony tissue of the tooth itself, containing sarcous elements, forms a barrier at some points to the ingress of any agent that you might use for septic purposes.

In the second place, I do not believe that the absolute filling—the completed perfect filling—of the apex of the root, in the generally accepted meaning of the word, is a "possibility."

In the third place, what filling-material can be resorted to that is absolutely impervious to moisture?

I am an old non-cohesive soft-foil filler from away back. I use a combination of cohesive foil with non-cohesive, when it is necessary. I saw a short time ago a report of an interesting series of experiments by Dr. Miller, of Berlin, who made a number of tests as to the leakage of cohesive and non-cohesive gold by means of tubes set upon gold pads. I do not know that I can explain this without the aid of a blackboard or apparatus, so that you will understand me; but I think I quite understood the explanation that Dr. Miller gave. He had a number of weighted tubes set upon mats of gold, some cohesive and some non-cohesive, and dropped into these tubes, slowly, water, and by means of accurate instruments observed the length of time which elapsed from the time that the water was put into the tubes until it oozed through the gold mat at the bottom of each tube. Do I make that clear? The non-cohesive foil stood the test for hours longer than any cohesive foil was capable of holding moisture, some forms of cohesive foil not being able to hold the moisture five minutes before it began to ooze out.

Now my friend—my good friend—Dr. Crawford, comes to the point where he wraps the porous bit of splinter with non-cohesive gold foil. He is as shrewd as he is good, and he knows that old-fashioned non-cohesive gold foil is the thing to stop a leak in a tooth if it is possible to stop it at all, and he does well. But Professor Miller (whom I am expecting to defend me against any attack you may make upon me) says that even non-cohesive gold will hold the moisture for only a certain length of time,—much longer, it is true, than any cohesive foil will do it, but that it finally leaks out. No matter how well the filling may be put in, the time comes when the leakage will take place.

I do not believe that any of the conditions are possible, and I trust I have succeeded in making some of you mad.

Dr. **Head.** The gentleman who last spoke has talked about the leakage of filling-material as to water. But the tooth itself will leak. Water will go right through the tooth itself. You take a tooth and try it, and put it in aniline dye, and the dye will stain it right through. Why talk of the leakage of water? It is the leakage as to bacteria that is the important thing to be looked after.

It seems to me it is a waste of time to talk about theories, when it is simply a matter of experiment to decide whether a thing is so or is not so.

Dr. **Register.** Nature abhors a vacuum, and yet it will not tolerate dead or foreign matter as such. Either it must become encysted, or a retrograde action breaks down the tissues until ultimately it destroys life by pyemia or nature discards the irritant.

The simple difference between what is called laudable pus and virulent pus is simply the difference between deoxidation and oxidation. If arsenious paste is applied to a living pulp, and the tooth in every other part is thoroughly sealed, and that pulp is destroyed by the poisonous action of the medicine—and I always think the small quantity of arsenic used in such cases is self-eliminating—but after the pulp becomes destroyed the result is a broken-down circulation, composed in the main of white and red corpuscles and pulp connective tissue, the white corpuscle or leucocyte being nothing more than a pus corpuscle or dead leucocyte. If you open the pulp you will find the contents perfectly sweet; there has been no impregnation from the atmospheric contamination, and no fermentation. But as soon as it is opened it at once comes in contact with the air, and the whole condition is immediately changed, for then there is the impregnation of bacteria, and fermentation sets up at once.

My idea of why the filling in canals of teeth lasts for a certain number of years and then trouble ensues, is after we have removed from the tooth its fleshy anatomical parts there remains the earthy anatomical parts, which are subject to the fluids circulating in and around the cement covering, and in time we have a disintegration of the earthy salts dependent on its abnormal integrity, and, as Dr. Head says, you can take a tooth and pass an aniline dye through it; and I have dissected teeth when I have passed iodin through the tubuli into the cementum, and that impressed me with the idea that if you can do that out of the mouth you can do it in the mouth with other mediums as well, and thus render them in a condition unchangeable under the conditions of general health, for the simple reason that the incipient cause of abscesses has been removed. This idea I have used in my practice with good results. Having removed the animal parts nothing remains but the earthy part, which will remain there for a certain number of years, depending upon the health of the individual, as Dr. Stockton so clearly called our attention to, and to local sterilization, as Dr. Crawford says; and when the change takes place from these causes you have a condition there that is analogous to any septic condition in its action.

Vice-President SANGER. Is there any further discussion?

There was no response.

If not, the subject will be passed.

Vice-President SANGER. Gentlemen: I have the very great pleasure of stating that Dr. Hayhurst, one of the pioneers of dental society work in the State of New Jersey, as well as one of the oldest practitioners in the State, will speak a few words to you in commemoration of this, the twenty-fifth anniversary of our Society's history.

Dr. HAYHURST (who was received with loud applause). Mr. President and Gentlemen: It is a surprise to me, although a pleasant one, that I should be called upon to speak on the silver anniversary of this Society. I appreciate the compliment, and will do the best I can.

With but a single exception, I believe I am the only one present to-day who was at the birth of this Society. The foundation-stone, so to speak, was laid in Trenton in fear and trembling. Some twenty of us gathered there twenty-five years ago, and this Society was born. I had no idea, nor could anybody have any conception of the strength and importance which it has acquired to-day in the profession and the world at large. Although it has had a migratory career, yet it has prospered beyond our most sanguine expectations. Its home has been in various places. It went from the city of its birth in Trenton to the city of Newark, to Mount Holly, to Atlantic City, to Long Branch, and Asbury Park. You can scarcely conceive the pleasure that I have experienced in being with you to-day, although I am not participating in the business because of my infirmities; but I am exceedingly gratified at seeing the magnificent audiences that have gathered here for the last three days, and in witnessing the earnestness with which they have listened to the papers and discussions that have been had, and I know that subjects have been discussed that were far above me, and have grown out of my reach entirely; but as they have been discussed, I clearly saw that the speakers were amply able to grapple with the questions,—questions of a character that I did not dream of when I first entered the practice of my profession, and that enable us to investigate the causes of disease and the philosophy of treatment for its cure, we might say to the very verge of scientific investigation, developing agencies that seemed entirely out of line for any practical application in a professional point of view, and showing the conditions under which they may be used to advantage, and also what bearing they have upon society at large.

And also that it is necessary that those, too, should be utilized and practical application made of them. I say I am happy to-day to stand before you to utter these words, and to express the feelings which actuate my heart. I take a pleasure in it that few can understand. The greatest honor that ever was conferred upon me, and I feel that honor yet, was when I was chosen the first President of this great and prosperous Society; and the pleasure of being active with you continued up to the time when my hearing was such that I could no longer fully appreciate all that was being done. But it has done my heart good to see my—shall I say my boys? knowing that many of them have been introduced here through the instrumentality of the examining board of which I was a member so many years. They have come up young men, strong men, in the profession. I sincerely rejoice to see you here. May you continue so. May this silver anniversary of our Society, of which you are members, give you new life; and may you continue to grow and grow, until the ultimate truth which the human mind is capable of appreciating and understanding is revealed, ever stretching upward and forward, never reaching the summit, but going as far as human intellect can go. Then I can stand (and it will not be long) and look back, and after those who have grown up with me have gone, can see that you are doing well.

As I said, there is but one man here besides myself who is an active member of the Society to-day who was with us at first; the others have gone. Some have become weary in well doing, and dropped out; some have finished their work, doing it as well as they could with the light they had, and gone over to the higher life. But there are enough of us left to form a glorious nucleus around which the whole profession may gather; and it is a happy thing to contemplate when we consider the places where we have met,—the small halls in the hotels, which sometimes have not been half full; it is a glorious thing to contemplate the magnificent gathering that is here to-day.

I thank you, my good friends, for the attention you have given these remarks. Had I known I was to address you, perhaps I might have prepared something more elaborate, and something more fit to transmit to posterity, than the few impromptu words that I have uttered. (Loud applause.)

On motion, adjourned until 2.30 o'clock P.M.

THIRD DAY—AFTERNOON SESSION.

The President called the meeting to order, and the Secretary called the roll.

The following named gentlemen were unanimously elected to membership: Dr. Frank J. Clawson, of Plainfield, N. J.; Dr. H. S. Taylor, of Asbury Park, N. J.; Dr. E. M. Cotton, of Plainfield, N. J.; Dr. J. S. Vinson, of Newark, N. J.; Dr. Robert Rossler, of Hoboken, N. J.; Dr. T. N. Bradfield, of Newark, N. J.; Dr. Horace Beemer, of Newton, N. J.; Dr. Frank S. Wells, of Plainfield, N. J.; Dr. Thomas W. Pucci, of Elizabeth, N. J.

The following named gentlemen were unanimously elected to honorary membership: Senator James A. Bradley, Asbury Park, N. J.; Prof. B. Holly Smith, Baltimore, Md.; Dr. James G. Palmer, New York, N. Y.; Prof. J. Foster Flagg, Philadelphia, Pa.; Dr. Geo. S. Allan, New York, N. Y.; Prof. J. E. Garretson, Philadelphia, Pa.

The Committee on President's Address presented the following report:

"The Committee on the President's Address state that they see nothing in the report upon which to make recommendation, and can only congratulate you on his able address.

"F. C. Barlow, *Chairman.*
"Thomas Moore,
"E. M. Beesley."

Dr. S. C. G. Watkins, Chairman of the Essay Committee, reported as per printed program.

Dr. Sanger, Chairman of the Clinic Committee, stated that his committee would report as per program; that there will a long report of the clinics given on the afternoon of August 2, which will appear in the stenographic report of the proceedings when printed.

Dr. E. M. BEESLEY, Chairman of the Committee on Entertainment, reported as follows:

"The Committee on Entertainment respectfully report that they have, to the best of their ability, produced the remedy and wiped out the distress, and hope they have left the gentlemen at ease.

"We acknowledge the receipt of contributions from several gentlemen which have done much towards alleviating suffering and the entertainment of all. These gentlemen will accept our sincere thanks. We think we have done our duty. The members of the Society are our judges.

"E. M. BEESLEY,
"O. ADELBERG,
"W. E. TRUEX,
"S. C. G. WATKINS,
"GEO. E. ADAMS."

Dr. J. ALLEN OSMUN, Chairman of the Committee on Dental Literature, presented the following report:

"Mr. President and Gentlemen of the New Jersey State Dental Society:

"Your Committee on Dental Literature beg leave to report that inasmuch as it is certain that any, and in fact every member of this Society is a reading man, and is therefore conversant with all the various advances made throughout the dental world in its literature, it would be a waste of time to recapitulate. Suffice it to say that the past year has been no exception to the trend of the dental profession, which for the last half-century has been upward and onward; that there has been a steady advance all along the line.

"New journals have come on the field, the old familiar ones have shown marked advances, the new text-books and scientific works all show a decided tendency to a complete understanding of the subjects treated, and our profession is to be congratulated upon its evident wealth of intellectual resources.

"And they also note with great pleasure that the same growth of knowledge is evident among our patients, that the public are being educated in dental matters is apparent to the most casual observer; also the fact is known that much can and ought to be done in this direction, to enlarge this information, not only by the personal effort of each practitioner, but by an organized effort on the part of the different societies.

"Much is now allowed to lie fallow, which, by a judicious effort, could be made of great benefit to the people and the profession.

"The method of imparting this knowledge seems to your committee to be worthy of serious consideration.

"Respectfully submitted,
"B. F. LUCKEY,
"C. S. STOCKTON."

Dr. W. F. TRUEX submitted the following report of the Membership Committee:

"During the past year there were but two matters of importance that have engaged the attention of the Membership Committee.

"The first has been an effort to bring into our Society a little more, if possible, than the usual number of new members. We have had formulated and printed the following letter:

"'July 1, 1895.

"'Dear Doctor: The twenty-fifth annual meeting of the New Jersey State Dental Society will be held at Asbury Park, New Jersey, August 1st, 2d, 3d, and 5th, with headquarters at the Columbia. You are cordially invited to be present.

"'During the past few years the Society has been untiring in its effort to protect and elevate the standard of the profession in this State.

"'It has succeeded in having placed upon the statute-books, laws that protect the qualified dentist, and prevent quacks and charlatans from practicing within its borders. You enjoy this protection and are benefitted as much by it as any member of the Society. In consequence of which you are earnestly requested to associate yourself with the source from which the benefits are derived, and aid by your presence, knowledge, and membership, a work that cannot help but do you good and benefit your patients.

"'The membership fee is five dollars, annual dues three dollars.

"'Fraternally yours,
"'WM. E. TRUEX, *Chairman*.

"'F. EDSALL RILEY, *Secretary*.'

"A copy of this letter has been mailed to such members of the profession throughout the State as the different members of the Society had reason to believe might desire to join the Society. As a result we have had quite a number of applications, but not as many as we might desire I wish to state that any member of the Society who has knowledge of any member of the profession in the State whom they have reason to believe would like to join the Society, if they will hand the name and address to the Secretary of the Committee, he will be looked after and asked to join the Society.

"The other matter is the Benefit Scholarship offered by the University of Maryland and the Baltimore Dental College. In accordance with the suggestion offered by the Society at last year's meeting, a series of questions in elementary English has been arranged and a competitive examination had to assist the Committee in assigning the scholarship. One man, Joseph B. Grom, of Newark, having applied for the scholarship to University of Maryland, has successfully passed the examination, and the Society has been recommended to issue to him the certificate. Two have applied for the scholarship to the Baltimore Dental College, J. D. Hoggarty, of Deckertown, and Cook, of Hackettstown. As both of these applicants are unable to be present at the time to take the examination, a resolution was passed by the Committee extending the time for holding the examination to the first of September."

Dr. F. C. Barlow presented the following report on Prosthetic Dentistry :

"Your Committee would respectfully report that as its members were so closely allied with the Committee on Clinics, a number of which were of the prosthetic type, a full report of that Committee made covers our grounds.

"They have, however, to congratulate you on the great advancement made of methods and adaptation in the cases of crown- and bridge-work as submitted in the mouths of patients. They would also make mention of the fine display of continuous-gum work by Dr. John Meyer.

"F. C. Barlow, *Chairman*,
"Oscar Adelberg,
"J. L. Crater,
"H. S. Sutphen."

Dr. F. C. Barlow, Chairman of the Press Committee, presented the following report :

"Would report, That the proceedings of the Convention, together with a full account of the clinics, have secured the attention of able corps of reporters of the daily papers of New York, Philadelphia, and Asbury Park.

"F. C. Barlow, *Chairman*."

Secretary Meeker. I have the following communication from the Central Dental Association :

[This relates to the work of New Jersey in the formation of the World's Columbian Dental Congress, and provided for a compilation of the history of New Jersey's efforts in that direction for insertion in the bound volume of Transactions of the World's Columbian Dental Congress. It was forwarded to the Publication Committee by the Secretary, and lost or mislaid.

The call below was furnished from the private papers of the Secretary :

In view of the fact that a World's Fair will in all probability be held in this country in 1892, it is deemed a wise thing that an International Dental Congress should be had at that time, and, as there has been some criticism made concerning the formation of the Dental Section of the International Medical Congress held in Washington, D. C., it is now proposed to formulate such a plan that entire unanimity and interest may be had.

The following scheme is proposed, and in order to bring the matter to the attention of the profession the following call is issued :

Call for an International Dental Congress in 1892.

At the nineteenth semi-annual meeting of the officers of the New Jersey State Dental Society, held at Montclair, N. J., January 11, 1890,

The following resolution was passed :

"Deeming it fitting and the proper time for holding an 'INTERNATIONAL DENTAL CONGRESS' in the year 1892, the officers of the New Jersey State Dental Society have appointed a committee to act in co-operation with like committees from other dental societies throughout the United States. They would request all societies to appoint a committee to meet with them at the Hoffman House, New York, on Tuesday, April 8, at 2 P.M., to formulate plans for the holding of the First International Dental Congress."

Trusting this will meet the approval of all the dental societies in the United States, and that the executive powers of the same will appoint delegates at once,

We remain respectfully,

S. C. G. WATKINS, *President.*
GEORGE E. ADAMS, *Vice-President.*
FRED A. LEVY.
G. CARLETON BROWN.
E. M. BEESLEY.
C. S. STOCKTON.
C. W. F. HOLBROOK.
CHARLES A. MEEKER, *Secretary.*
GEORGE C. BROWN, *Treasurer.*
B. F. LUCKEY.
A. R. EATON.
JAMES G. PALMER.
OSCAR ADELBERG.
HENRY A. HULL.
WORTHINGTON PINNEY.

The following scheme will be submitted:

GENERAL.

Each State in the United States, through its societies, to send delegates, and be allowed twenty votes each.

The delegates assembled to elect from among their number a permanent President, Vice-President, Secretary, Treasurer, and an *Executive Committee of Fifty Members*, to be divided in Sub-Committees of finance subscriptions, essays, transportation accommodations, legislation, and other committees necessary in the perfection of plans.

STATES.

Each State and Local Societies in the State to appoint general State Committees, of as many members as may be needed, said State Committee to elect a working Executive Committee of twenty members *who* shall elect a President, Secretary, and Treasurer, and said Committee shall canvass their respective States for subscription papers and exhibits, and they shall be the total number of delegates allowed each State in the general Congress Committee.

Societies who appoint delegates will please address the Temporary Secretary,

CHARLES A. MEEKER, D.D.S,
29 Fulton street, Newark, N. J.]

It was moved and seconded and carried that the resolution be adopted and a committee of two be appointed in conformity with the request of the resolution.

SPECIAL NOTICE.

It has been the desire of the Exhibit Committee to extend a particular invitation to the ladies of Asbury Park. The exhibitors have glady consented to assist the Committee in their work.

We hereby extend to the ladies an invitation to view the Dental Exhibits at the Auditorium, Monday, from 9 to 12 A.M. Of course, it is not the desire of the Committee to exclude the gentlemen on this occasion.

HARVEY IREDELL, *Chairman.*

Dr. OSMUN. I desire to offer the following resolution :

" *Resolved*, That in future all papers shall be submitted to the Executive Committee before they can be read before this Society."

The above resolution was regularly seconded.

The PRESIDENT. Gentlemen, I think that is a very good resolution. I do not know that I could suggest anything which would strengthen it at all, but I think it is the duty of the Executive Committee to thoroughly investigate every paper that is proposed to be read before this Society, so that they may know what the papers are.

What is your pleasure, gentlemen, with regard to this resolution?

Dr. WATKINS. Mr. President, I do not see very much necessity for this resolution. We have considerable difficulty in securing papers ; there are very few who can get their papers ready in time so as to submit them to the Executive Committee. It will simply make more work and more confusion, and I cannot see wherein the benefit will come. If it is insisted by the Society that they shall be more particular in the future than they have been in the past in regard to papers to be read, in all probability that is all that will be necessary, and the wishes of the Society would be carried out without the red tape of presenting the papers to the Executive Committee.

It seems to me to be entirely unnecessary.

The Essay Committee will probably have enough to do to secure papers, without any further trouble in that regard.

The PRESIDENT. As I take it, this is simply an action to be taken by the committee in charge, so that they may investigate the paper before it goes on the platform.

Dr. ADELBERG. I was told last evening, that every paper read before the New York Society had to go through that course before it was read. If that were done here, such little slips as have been made during this session would not occur. I do not want to mention names, but I refer to advertising local practitioners at the expense of our reputable members of the profession.

Dr. SANGER. Having had some experience in the procuring of papers for this Society, and knowing the difficulties that always are met by an essay committee and the faithful work that is done in the desire to give satisfaction, it is evident to me that it is utterly impossible for us to get responsible men who will be willing to pass before a committee of censors before coming to our Society to read a paper, and the men who will allow their papers to pass before such a committee are not the men we want to have read papers before us. (Applause.)

Therefore I am entirely opposed to such a resolution as this, because I foresee a crippling of the usefulness of this Society as an educator of the profession and of the public.

Dr. OSMUN. I also have had a little experience in getting essays. I would rather have two essays that were right and proper to bring before the Society than a dozen or five hundred like some we have had here, and any man who dare not allow his paper to go before the Executive Committee for examination so that they may see if it is proper to bring before a sister society, is one whose paper we do not want.

Dr. ADAMS. There is one other thing to be said in connection with the securing of these papers. There is an Essay Committee appointed by the Society, and that Committee is ambitious to out-do itself from year to year, and puts forth strenuous efforts to obtain a plentiful supply of papers. Now, it may be possible as the season draws near for the meeting, there is a lack of material, so to speak ; the Essay Committee, through its Chairman, looks to other quarters for papers. There has been a reflection made upon a paper read before this Society this morning, and I think no one can be in doubt as to the purport of the paper, and I think, sir, that before this question before the Society is put to a vote, it would be well for us to give the matter deep consideration, for, possibly, because of this very debate now occurring, the Essay Committee appointed for the next year will be more cautious.

Dr. ADAMS. The Essay Committee is appointed the same as other committees for a certain purpose, and if they are not to be trusted to carry out their duties they shouldn't be elected. Is there any reason why the Executive Committee should be more capable of examining these papers than the Essay Committee who will have them in charge? The Essay Committee has upon it several members of the Executive Committee ; some of the same people are on both Committees. Why should these essays be placed in the hands of the Executive Committee and taken out of the hands of the Essay Committee, so long as there is an Essay Committee appointed on purpose to do that work?

I don't see any necessity for the action.

The PRESIDENT. The only thing I can see important regarding this matter is, it casts a reflection upon the Committee which has been in existence this season. I think it was the duty of that Committee to have attended to this matter, and not to allow improper papers, or papers that would prove objectionable, to be read. In the future doubtless that Committee will be more cautious, but it does seem to me that some action should be taken.

Dr. BEESLEY. I don't see how the Committee of this year can be blamed, because, so far as seeing the papers is concerned, I do not think the Committee saw a paper, and it was almost impossible to find the reader of a paper before he got upon the platform. Had the Committee these papers in their possession, they might have perused them and found out what the contents were, so that there would not have been some papers read on the platform that we have heard read there.

Dr. OSMUN. It is immaterial to me whether it is the Essay Committee or the Executive Committee who controls this subject, and I would just as leave have my motion changed to read "the Essay Committee."

Dr. SANGER. I move to amend as follows:

"That hereafter the Essay Committee be requested to look over all papers to be read prior to their being read before the Society."

Dr. OSMUN. I accept that amendment.

Motion as amended was thereupon carried.

The Treasurer presented the following report:

ELIZABETH, N. J., August 3, 1895.

GEORGE C. BROWN, TREASURER, IN ACCOUNT WITH NEW JERSEY STATE DENTAL SOCIETY.

CR.

Balance in Treasury, July 17, 1894	$27 09
Donation from W. H. Trueman, Philadelphia	5 00
Annual Dues	219 00
Received from nine new members	72 00
" " Executive Committee	72 50
	$395 59

Dr.

Cash paid, S. C. G. Watkins	$3 81	
" " C. A. Meeker	63 00	
" " Holbrook & Meeker	15 60	
" " B. F. Luckey	38 60	
" " Reception Committee	4 90	
" " F. L. Hindle	6 50	
" " George E. Adams	14 30	
" " Advertiser Printing House	68 50	
" " The Orange *Chronicle*	4 75	
" " D. W. Craig	75 00	
" " J. Heidingsfeld	5 50	
" " Charles Broadway Rouss	3 14	
" " Postage, Expressage, etc	6 15	
J. W. Bullis, printing, etc., Iredell	6 00	
		$315 75
		79 84

The President. We will now proceed to the election of officers.

The election of officers was then proceeded with, and resulted as follows:

President, Dr. Roderic McLean Sanger, Orange, N. J.

Vice-President, Dr. Harvey Iredell, New Brunswick, N. J.

Secretary, Dr. Charles A. Meeker, Newark, N. J.

Treasurer, Dr. George C. Brown, Elizabeth, N. J.

Executive Committee, Drs. Richards, Adelberg, Watkins, Truex.

Member of State Board of Registration and Examination, Dr. E. M. Beesley, Belvidere, N. J.

Membership Committee, Drs. Woolsey, Crater, Osmun, Riley, and Sutphen.

On motion, it was resolved that this Society extend a vote of thanks to Senator James A. Bradley for his kindness, and the Secretary was instructed to send a copy of this resolution to Senator Bradley.

Dr. Osmun. I suggest that a vote of thanks be extended to the different committees who have so admirably arranged for this meeting; to all of the committees, for they are fully deserving of such a vote, which should be given to them from the very bottom of our hearts, for in all the twenty-five years of the Society's meetings we have never had one which would surpass this, and they do most certainly deserve our most heartfelt thanks and gratitude for their arduous labors in our behalf.

The above motion was seconded and carried enthusiastically.

The installation of officers was then proceeded with.

President SANGER (on taking the chair). Gentlemen, we have no time for speeches. Besides that, you all know my natural inability to speak upon any occasion of this kind, but I thank you very much for the honor you have bestowed upon me. I consider it one of the greatest honors that could come to the lot of any professional man to be elected to the presidency of a Society of which his neighbors and friends are the members; therefore, gentlemen, my only hope is that I may be able to fill the office with the dignity that it is fully worthy of. I thank you.

It gives me great pleasure to have associated with me a gentleman like Dr. Iredell. Next to the honor you have conferred upon me in the gift of this office of President, comes the honor of being associated with such a man as he.

Vice-President IREDELL. Gentlemen, it is hardly necessary for me to make a speech,—Dr. Sanger made my speech for me; but I do thank you for the honor bestowed upon me very much. It is growing late, though, and you know our photograph is to be taken, so you will kindly excuse me from any further remarks. I thank you.

President SANGER. Dr. Meeker, as Secretary of this Society, I congratulate you in your election to the office of Secretary.

Secretary MEEKER. Mr. President and fellow-members of the State Dental Society: This, I believe, is the twenty-first year of my incumbency of the position of Secretary of this Society. (Loud applause.) I did say a month ago that my work was ended; writing an average of forty letters a day for the past month seriously interfered with both pleasure and business, but the combined efforts of a number of my friends induced me to stand once more for this position. (Applause.)

As I look back over twenty years of my incumbency of the position, I can see to what grand proportions the New Jersey State Dental Society has grown. (Applause.) I am in a position to know, from the fact that I receive letters from all over this country, and they all mention with pride the progressiveness of the New Jersey State Dental Society. (Applause.) It is an honor to me to be your Secretary, and my wife tells me that if I was not Secretary I should still be doing something for the Society, and I firmly believe what she says.

I thank you, gentlemen, for conferring upon me once more this office, and I will endeavor to do the work to the satisfaction of all. (Loud applause.)

President SANGER. Gentlemen, let me introduce our new Treasurer, Dr. Brown.

Treasurer BROWN. Gentlemen, as you will see by my report, I have more money in the treasury than we have had as a balance for a good many years, and it has been a great gratification for me to present this report to you.

I thank you for this renewed expression of your kindness which has been extended to me, and I hope I may be as faithful in the future as I have tried to be in the past, and would have your approval of my course. (Applause.)

President SANGER. The hour has now arrived for finally adjourning the twenty-fifth meeting and silver anniversary of the New Jersey State Dental Society, and a motion to adjourn is now in order.

On motion, adjourned.

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